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Propolis and Comb Honey

By Frank Rauchfuss, Manager Colorado Honey Producers' Association

THE condition of honey sections after being filled with honey depends a good deal on locality, whether there is a reasonably rapid honeyflow, whether the colony is properly handled so as to occupy the super quickly after it is put on, and whether the honeyflow will continue uninterruptedly until the combs are built out in the sections, filled and capped. Under very favorable conditions supers are sometimes completed within five days after they have been put on the hive, and when such conditions exist even an amateur will sometimes secure honey where the wood is almost free from propolis.

When conditions exist as they did with us this year, that a super will stay on the hive two weeks, and up to four weeks, then it requires more exertion on the part of the beekeeper to manage to keep this propolis staining away, and the best thing for this purpose is the paraffining of the sections, at least the tops of the section, where the bees are liable to get in their best licks.

Some years ago we were advised by Harry K. Warren, of Wabuska, Nevada, that he was paraffining the tops of his sections. We tried it right away in our Colorado apiaries and found out that this was a grand success; so now our members in Wyoming, Montana and Colorado are to a large extent paraffining the tops of their sections, and they find that it pays big, because labor is an expensive commodity and in some towns it is not easy to get suitable persons to work on cleaning sections.

Another thing that will help the beekeeper along very much in producing a nice looking article is the paraffining of the wooden separators. Any beekeeper can do this at home at a comparatively small expense. We find that if separators are properly paraffined the edges of the section will stay much cleaner than if the paraffining of the separator has not been done. Some years ago my brother, Herman, experimented on a section-cleaning machine. He spent quite a little time and money on the apparatus, and, while it worked very satisfactorily, he was not quite satisfied with it and never put it on the market. However, if some genius could be interested in working out a practical device for the cleaning of sections it would help the comb honey business.

Cottonwood catkins. From the buds bees get quantities of propolis

We all know that there is altogether too much honey put on the market in an unattractive condition, and the principal trouble is that the producers of such articles are not reading the bee journals, and for that reason cannot be educated on how to put out better looking comb honey. Our grading rules demand reasonably good work in cleaning sections, and those sections that are badly stained are disqualified.

Now, in summing up the situation, what will help out is in the first place a well manufactured section with a smooth surface and made of bright lumber; second, clean section holders and clean separators, the separator preferably paraffined and the tops of the sections paraffined; third, not to put supers on until the colony can occupy them from side to side and from end to end; and, lastly, a good honeyflow.

One inquiry I had overlooked is: What do we consider a fair labor cost in cleaning sections of comb honey? Our members that are located where propolis is not too abundant expect their scrapers to put out not less than forty cases of comb honey per day, scraped but not graded. The grading usually is done by another person. We know of instances where eighty cases have been properly cleaned by one person in eight hours of work, but these are exceptional locations and exceptional workers. On the other hand, only yesterday a prominent beekeeper said that he had a couple of women scraping sections for him who did not clean more than ten or twelve in a day. This, of course, makes an almost prohibitive cost for scraping. However, my friend's location is not one that is blessed with the absence of propolis. It should not cost more than 10 cents per super for scraping; this means taking the sections out of the super, cleaning the sections outside, edges, and even inside in the corners when required, and putting them on a table or in their specially provided case for the grader to handle afterwards. To do good work, a scraper should have sharp knives, and in larger apiaries usually two knives are given to each scraper in the morning, one to be used the fore part of the day and the other one the latter part of the day; a good, smooth edge is necessary.

Beekeeping Progress In the South

By S. M. Byars, County Agent

BEES are kept on a large number of farms in the South. Wherever you go, you will observe a number of old "tombstone" box-hives about the yard or in fence corners. Most likely they are almost covered with weeds, briers, and other growth. No attention is given them except to hive the swarms in the spring and to rob them later in the season, if the bees are fortunate enough to store any honey to rob. Usually the old stands do little but swarm, becoming too weak to store enough honey to keep the bees through the winter. Many colonies die before spring. The beekeeper is ignorant and indifferent to the condition of his bees and with the old box-hives is unable to see what is going on in the hive. The average yield of a colony of bees kept under such conditions is a few pounds of chunk honey of poor quality, and many swarms.

The efficiency of a beekeeper is measured by the number of swarms he gets in a season. Beekeeping is regarded as an unprofitable sideline of farming. This opinion has existed so long that much evidence is required to change it. This evidence is being supplied by individuals, communities, and even whole counties, waking up to the possibilities of beekeeping and demonstrating these possibilities by using modern equipment and modern methods. Such a demonstration has been worked out here in Anderson county.

For many years, beekeeping in this county was of little importance and no profit. Finally, crimson clover and hairy vetch were popularized as soil-building crops. As these plants are heavy yielders of honey, beekeepers who were employing proper methods found their bees profitable. Then the county agent, who has been trying out a few stands of bees, was convinced that beekeeping, if properly carried on, could be made a profitable business. About that time, Clemson College employed an extension bee specialist. He and the county agent, with the few beekeepers who had found beekeeping profitable, put on a campaign among other beekeepers to get them to adopt modern methods and use modern equipment. A few of the more progressive fellows bought modern hives with movable frames and full sheets of foundation. Largely through the activities of the county agent, bees were transferred from the old box-hives to these up-to-date hives. In most cases the bees from two, three, or more box-hives were condensed into one modern hive, thus making a strong stand. This was in the spring of 1920. Throughout the season, careful attention was given these bees, and the beginner was taught how to inspect his bees and learned the essentials of successful beekeeping. That summer and early fall, when the bees were robbed, it was found that one of the strong modern hives yielded more honey than all the rest of the bee yard, consisting of five to ten box-hives. Not only was the yield of honey heavier, but it was nicer and of better quality.

While the beginning was small, it was sufficient to awaken an interest in beekeeping. It had demonstrated that beekeeping could be made a profitable sideline. The following spring, and every spring since then, the county agent has been swamped with requests for assistance in transferring and other bee work. The whole county has been aroused, with the result that approximately 1200 colonies are now in modern hives and are given the attention required, and the work is still growing. During the past few years the local market has been well supplied with honey of the best quality, while hundreds of farm families have honey on the table whenever they want it.

The second year after interest in beekeeping had been awakened, the most active beekeepers of the county organized into the Anderson County Beekeepers' Association. Since that time the Association has been a big factor in the development that has taken place in the beekeeping industry in the county. The Association holds monthly meetings in the county agent's office. Good speakers are secured from time to time to address the meetings. Among these have been our State Entomologist, A. F. Conradi, and Mr. C. P. Dadant of Illinois, both widely known among beekeepers.

In addition to the educational work done at regular meetings, the Association gets out a monthly bulletin in the interest of the industry, has assisted with many demonstrations in transferring, condensing and requeening, conducted tours to prominent beekeepers in other counties, and has been a big factor in getting state laws passed in the interest of the beekeeping industry. For the past two years the Association has put on excellent exhibits at the Anderson Agricultural Fair. These exhibits have been educational in nature and have attracted much attention among the visitors, who numbered over 100,000 each year.

Facts secured relative to the bee industry indicate that there are now approximately 5,000 stands of bees in the county, of which about 1,200 are in modern movable-frame hives. Most of these have been transferred from old box-hives within the past few years. The yield of honey from the box-hives is about fifteen pounds each per season, while the average for all standard ten-frame hives is over sixty pounds each per season.

Tulip poplar is our most important early honey plant, closely followed by crimson clover and hairy vetch, while cotton comes in the middle and in late summer aster and goldenrod yield. Hubam and other varieties of sweet clover have been planted to some extent for bee pasture and have proved satisfactory, but our experience is too limited for us to say how extensively they will be grown.

The beekeeping industry in Anderson county is no big thing, but it is being established on the proper basis and, with the success already attained, we believe that it will continue to grow and prosper.

Anderson, S. C.

The Abnormal Fear of Bees

By L. H. Cobb

THERE is something funny about the universal fear of a bee buzzing contentedly about. A bee, busy about its business, is attracted by some sight or odor on or near a big, healthy man and flies close to him with a pleasant hum. Immediately the big man begins to beat the air wildly and stumble over flower beds to get his head into the foliage of some tree. The bee is surprised, but resents this pounding of the air, and its contented hum changes to an angry buzz which is its war cry, and as it launches itself straight at the man's eyes all the bees within hearing take up the war cry and rush to the attack, and those in sight, as the frantic threshing gets fiercer, hurry to get into the game. Probably that man would have faced a German machine gun nest as a matter of duty and never faltered, but the little bee flying near, innocent of any evil intent, sends him into a panic. I have seen so many men show such ridiculous fear of bees that I have concluded that they are more timid where bees are concerned than are women, yet I have seen women act as wildly. I had an observation hive under a cherry tree beside the walk to my greenhouse. While many girls and women watched them with interest, some would not

come within a rod of the hive. One woman with two children was going out to the greenhouse when she noticed the hive, and the bees flying, and asked what it was. I explained and started to raise the outside cover so she could look through the glass, but bless you, she was not looking for bees. She grabbed the children's hands and started back, dragging them along, nor stopped until outside the gate. No amount of assurance could induce her to come in, and she went around through the garden to the greenhouse door.

I'll admit that a lot of bees on the warpath will scatter a small army and do it quickly, but if left alone, bees seldom start trouble. The buzzing of a bee about the head is nothing to fear. The angry bee that means business does no buzzing around you. It strikes straight and swift and the stinger is sent home as it hits, and the aim is usually at the face—more specifically at the eyes. Excited bees flying about when you are working with them, if you have given them some smoke, often settle on you and seem ready to sting recklessly, but I have worked hours with them in this fussy stinging mood without being stung to amount to anything. This does not mean that I have always worked with bees and never been stung. Several times they have routed me, no matter how much I smoked them or how gently I worked. Sometimes they have been so warlike that the smoke seemed to infuriate them the more. When I find them thus I shut the hive and wait until they are more peaceable. I imagine that robbers had been bothering about or they had been trying their hand at robbing and were excited and angry. The sudden stopping of the honeyflow or the presence of exposed honey where the bees can get at it and fight over it makes for vicious tempers at the time.

Now the stinging of a dozen angry bees is nothing serious or to be given much notice by a man of grit unless they cause too much swelling, and even this does not last long. After being stung a few times, swelling will be lighter with most people, and with many, swelling never follows. With me, after I had the first few stings the only sign left is a white spot, when it has been very severe, and I will take a bee sting every time in preference to a mosquito bite, for after a few moments the bee sting ceases to trouble me, while the mosquito bite stings and itches for hours.

Now a word of advice: No matter how much a buzzing bee annoys you, do not try to swat it unless you are sure of your aim and have a good swatter, for even the friendliest bee will swat back, and is not half as apt to miss as you are, and you will be lucky if several others do not join in the swatting. Just quietly move until your head is in the foliage of the nearest tree, if you feel the need of paying any attention to it. Of course, old beekeepers know well these pointers, but there is a small army of beginners, and some old-timers, who are not yet over their fear of stings. Some of them smoke cruelly, while others try to keep away from the hives or set them away off. I want my bees where they get used to me, for I have found that they resent my working with them much less. One year I had a number of colonies where my daily work took me back and forth in front of the hives. I have gone about my work when they were flying so thickly that they were continually bumping against me, yet I paid no attention to them or they to me, nor did they pay much more attention when I was working over the hives, but I was careful not to recklessly swing a scythe or hoe or anything else that would bother or excite them.

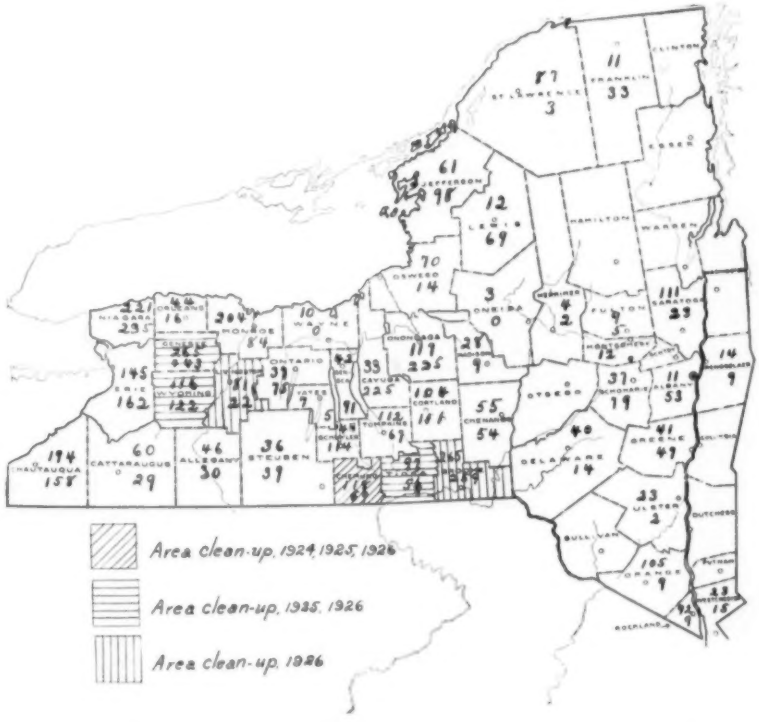
Kansas.

From Long Ago

We are indebted to S. Doyle, of Ireland, for a bundle of clippings on bees and beekeeping taken from the "Field," a famous old country gentleman's newspaper of long ago. These articles were written by W. B. Tegetmeier and appeared in the year 1859. Tegetmeier was a well known writer on bees, poultry and other nature subjects of a generation ago.

Great changes have taken place in the accepted methods of handling bees in the years since these articles were printed.

Area Cleanup In New York

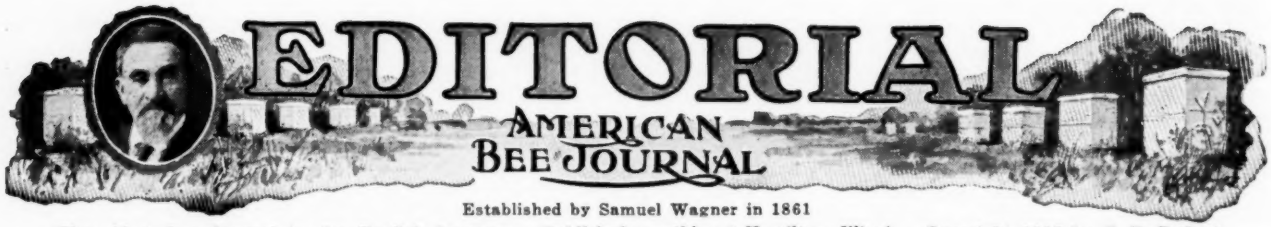


The map shown herewith tells the story of the progress of disease eradication in the State of New York for 1926. It is from the recent circular 325 published by the Department of Agriculture and Markets.

To quote from the circular mentioned: "American foulbrood cannot be completely eradicated without the examination of every apiary and colony in an extensive area, and the effective treatment of every colony found infected, until no diseased colonies or infected material remain."

It is the policy of the Department to continue work in any region until all traces of disease are completely removed. The upper figures shown in each county on the map where work has been done show number of apiaries inspected. Lower figures show number of colonies with American foulbrood.

W. D. Wright is inspector in charge of eastern and southern districts. Charles Stewart is the inspector in charge of western and northern districts.



Established by Samuel Wagner in 1861

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Why Do We Not Cooperate?

Why is it that some industries have no difficulty in obtaining the cooperation of their members, while others, like beekeeping, have vainly striven in that direction without success?

Our attention is called to the thorough cooperation of the walnut growers. They tell us that 97½ per cent of the walnuts are produced in California, and that the California Walnut Growers' Association, numbering 4849 members, crates, packs and distributes more than 85 per cent of this crop, with great economy and profit.

The difficulty with the beekeepers is that they are scattered over the entire forty-eight states of the Union and that new members of the craft come in and old ones drop out constantly.

Mr. W. Sheron, who writes an article in our Journal, page 621, entitled "Another Waste in Swarming," shows us that it is only necessary that a man should harvest a swarm, in a good season, to supply him with honey for sale. Such a producer and, in fact, all the small producers of honey, are haphazard producers and crowd their product on the market, regardless of the interests of others. That is what makes cooperation so difficult, and it is not astonishing that we have tried for fifty years to organize it, with blank results.

It is exactly the same for beekeepers as for farmers. They need to be educated in the necessity of cooperation. Not till they are thoroughly convinced and educated to this will it be possible to expect joint action which will result in the regularity of prices of their products.

The Origin of Propolis

In our July number, page 358, we mentioned and criticized the theory held by some German scientists, that propolis is a product of pollen.

Since that time, we have made investigations concerning the production of propolis. We have just received an interesting reply from that practical beekeeper, Frank Rauchfuss, of Colorado. Mr. Rauchfuss writes:

"Answering Mr. Dadant's inquiry relative to the sources of propolis, wish to say that in most of the beekeeping districts of the intermountain region cottonwoods are perhaps the principal source of supply for this material. In the mountain valleys, however, the narrow leaf cottonwood, called by some Balm of Gilead, is also responsible for much of the beeglue which is deposited on sections. This narrow leaf cottonwood furnishes a red beeglue of rather hard texture. There is one thing which I cannot understand, that Italians and hybrids will gather different propolis from Caucasians. The Caucasians, invariably, whether they are up in Colorado, Wyoming, or Montana, chink up or close up their entrances, and use propolis at other places very generously, and this propolis is of greenish gray color, and of soft texture, easier worked under average summer temperatures when the other beeglue will be much firmer. Comb honey produced by Caucasians is not any more propolized than what other races would do.

"Perhaps it would be a good plan to bring out occasionally that people scraping sections will sometimes experience quite a little trouble, by propolis poisoning, wherever their hands or arms are exposed to the dust that arises from scraping sections. The skin will be irritated and this gives some people considerable pain, which is not easily gotten rid of. Others are troubled by inhaling this dust, when it gives them a kind of hay fever. It troubles me that way, so I make a practice of not staying in a room where sections are being scraped, for any length of time." Frank Rauchfuss.

We believe one of the reasons for the greater use of propolis by the Caucasians around their entrances is due to the existence of a greater number of enemies of bees, in their country than here, enemies such as plundering wasps, death-head moths, etc. The same experience is reported by Baldensperger with the bees of southern countries.

Huber also calls propolis a "gum-resin" harvested mainly upon Lombardy poplars. He made experiments upon this and had the pleasure of seeing the bees gather into their pollen baskets little scales of propolis, which they carried home.

Snow in the Apiary

Should we let the snow accumulate around the hives in the short days of winter, or must we clean it away? Let me tell you of a little instance.

I went once, late in December, to call upon a farmer who had a few box-hive colonies of bees. There had been snow on the ground for several weeks and it had drifted around fence corners and back yards. We talked of bees. When I spoke of seeing that the bees had some air, if they were in a snowdrift, he suggested that we go and see what condition his hives were in. They were on the south side of a fence corner, and when we got there all that we could see were some mounds under a well-piled drift. This caused him some excitement and he immediately "dug out" the nearest hive. They had been covered with snow for fifteen or twenty days. But when the hive was uncovered, the bees began a buzzing which seemed to imply a question on their part: "What are you waking us for?" I suggested that we cover them up again. But the damage had been done; the bees had been disturbed. This colony was the only one of his eight or ten that did not go through the winter. They died in early spring, of diarrhea.

Another neighbor beekeeper kept his hives on a rack, two joists about a foot apart. The hives had no bottom boards, the boxes were simply set astride of the joists. These bees also were wintered on the south side of a fence and were usually in a drift, as long as there was snow. He rarely lost any. Of course, no colonies could go through the year and into the winter without a bottom board, unless they were powerful colonies. That is probably why he rarely lost any. I would not advise anyone to winter colonies without a bottom board.

The most important requirement for wintering is good honey. If the bees have plenty of good honey and are not disturbed, they have good chances of safe wintering.

Witnessing the Mating of Queen and Drone

Mario Gerloni, in "L'Apicoltura Italiana," reports witnessing the mating of a queen and a drone, at a very short distance from the hive, only about five yards. The queen at once flew up and re-entered her hive, where he found her a little later with the organs of the drone still visible.

Gossip and Misrepresentation

In the "American" Magazine for November, there appears a very interesting article by Edgar Guest, on "Gossip." He shows how gossip and misrepresentation can spoil the reputation of a man or even of a family.

I used to sell honey to our blacksmith, and there was living near him an old fellow who loved to gossip. He had two or three hives of bees, but got little from them. As we harvested big crops of honey, he used to "gossip" about us, and once told the blacksmith that our honey was mixed with sugar and that this was the reason why it granulated. I heard of it and it happened that, one day, when I was delivering a ten-pound pail of granulated honey to the blacksmith, this old fellow was there. I took the bull by the horns, addressed him directly and told him that I was informed that he said that our honey was adulterated. I now demanded that he look at the honey in this pail and tell whether it was pure or not. He did not hesitate, but pronounced it impure. I called him a fool and told him that he did not know anything about it and that he knew that he was just guessing, for I knew my honey was pure. He became very angry and went away in a sulk. But ever afterwards he was very polite to me, and I don't believe he ever again ventured to say anything about our honey.

Now let me tell a little story of old time, some 600 years B. C.:

Æsop was a Greek fabulist, very intelligent and very witty. But he was a slave, in his young days. One day, his master, Xantus, who was about to treat his friends to a banquet, commanded the slave to buy the best things he could find on the market. When the banquet was served, there was nothing but tongues in every course of the meal, tongues prepared in all sorts of sauces, but tongues only. The master was very angry and called the slave. "Did I not tell you to get everything of the best for this banquet?"

"Well," replied Æsop, "what is better than tongue? It is the tie between citizens, the key of sciences, the organ of truth and of reason; by its use we build cities and rule them, we teach, we convince, we pray to the gods."

"All right," said his master, "tomorrow I am going to have these same guests and I want to diversify. So tomorrow you will serve only the worst things that you can find."

The next day Æsop served only the same dish, tongues, saying that tongues are the worst thing in the world, the cause of all differences, of all lawsuits, of all gossips, of all misrepresentation, the source of strife and war.

So, my friends, when you are about to gossip about your neighbor beekeeper and speak ill of his honey and his honesty, hold your tongue. Do not gossip, do not misrepresent. In addition to the damage you will cause to him, you are just as likely to injure your own reputation, for when mud is splashed it is likely to spatter back on the man who stirred it.

National League Meeting at San Francisco

How many of our readers are going to San Francisco for the Honey Producers' League meeting, January 25-27? Great preparations are being made by the California Beekeepers' Association to welcome the beekeepers of the East, and it will certainly be a great event.

The President of the League, Professor H. F. Wilson of the University of Wisconsin at Madison, has gone to a great deal of effort to arrange for special Pullman sleepers, from Chicago and St. Louis, to carry the beekeepers to and from the convention. Similar arrangements were made in 1903 by George W. York, who was at that time publishing the American Bee Journal at Chicago, and a happy carload went from Chicago to Los Angeles, stopping at the Grand Canyon on the way. Those who possess the year 1903 of the American Bee Journal may find the account of the entire trip in different numbers.

Owing to Professor Wilson's efforts, arrangements have been made for an official special train of sleepers, leaving Chicago January 21, on the C. & N. W., at 2:30 p. m., and St. Louis at 2 p. m., on the Wabash, for this trip. Special schedules have been printed by the railroads and may be had by addressing A. C. Hedlund, G. P. A., 33 West Jackson Boulevard, Chicago, or H. F. Wilson, University of Wisconsin, Madison, Wisconsin, or C. L. Corkins, University of Wyoming, Laramie, Wyoming. Details, as well as cost of the trip, may be ascertained at once. Let those who wish to go attend to this at once. The information costs nothing.

At least one member of the American Bee Journal family will be in this trip.

Changes at Washington

After fifty years of service to the government, Dr. L. O. Howard has resigned his position as chief of the Bureau of Entomology. His many friends among the beekeepers will regret his action. So long has he occupied his place as chief entomologist that it is hard to think of him otherwise.

The beekeepers of America owe much to Dr. Howard. Every activity of the Division of Bee Culture was subject to his approval and was under his supervision. He has always been interested in the progress of the beekeeping industry and has pushed the beekeeping investigations to the limit of the funds available.

In his retirement he has the best wishes of the industry. May he enjoy many years of ease and comfort in the study of his beloved insects. Dr. Howard is not the kind of man to be inactive as long as health remains. He lays down the responsibilities of an important branch of the government service in order that he may be free to carry on investigations which interest him.

The new chief, Dr. C. L. Marlatt, has won wide recognition for eminent service in the field of entomology. Let us hope that he will prove as sympathetic and helpful to the beekeepers as has Dr. Howard.

Straw or Leaves for Winter Packing

I have always used forest leaves for winter packing of colonies. But labor is higher and leaves are not always dry enough for packing time. So our people now use mainly straw for packing the colonies out-of-doors.

But leaves are best. It is not necessary to make scientific tests to realize this. Did you ever go camping, duck-hunting, in the woods, on the river shore, in the late fall? If so, did you sleep on straw or on leaves? I have slept on both these cushions, as occasion offered. If the leaves are dry, I am much more comfortable on them than on straw. The leaves adjust themselves much better to all angles, they make a more close-fitting cushion than straw.

It proves the same in filling the empty supers left over the hives, or the corners around each. The only difficulty is to find enough of them at the proper time. Maple leaves make the softest, warmest cushion. Hickory leaves are worthless, for they shrink up and wrinkle when dry and make more or less dust.

When our hives are well packed, everywhere except at the alighting board, it seems to me that I can sleep better and feel more cosy than if I know that they are exposed to the sharp north winds.

Italian Beekeepers' Congress

The magazine "Apicoltura Italiana," in its October number, gives a long account of the National Italian Convention, which took place in Trent (Trient) September 2-5.

Trent is an Italian city in the Tyrol, which was under Austrian domination from 1814 until 1918, when, at the end of the World War, it was returned to Italy.

They had a great discussion upon the poisoning of bees by the use of sprays on fruit blossoms; another discussion on the fight against the Nosema, which appears to be quite strong in the upper Adige. A number of resolutions were adopted tending to the improvement of beekeeping in the Italian peninsula.

Next to the street is a room used for an office

At the end of the building is a bee tight garage

A Well Arranged Honey House

By Frank C. Pellett

THE planning of the honey house is well worth more attention than most beekeepers give to the subject. After visiting some hundreds of such buildings from New York to California, I am impressed with the fact that the average honey house is poorly planned. A little thought given to the arrangement of the interior of the building will save many steps at the time when the beekeeper is busiest.

Often it is necessary to adapt some building already standing to the present need. In such a case one must make the best of what he has. Where, however, a new building is to be erected especially for handling the honey crop, a good deal of thought can profitably be given to efficient arrangement.

In selecting the site of the building, much will depend upon the lay of the land. Where a side-hill location is available, a two-story building which will permit the honey to run from the extractor into a storage tank on the floor below will greatly simplify the operation.

The outfit which I am about to describe is located on a level lot in a small city where no such plan was possible. There are hundreds of bee men similarly situated and perhaps some worth while suggestions may be secured from an account of the outfit in use by Elmer Kennedy, of St. Edward, Nebraska. Kennedy has been engaged in beekeeping in his present location for only a few years. He had followed the business of beekeeping for many years in Colorado and was able to profit by his previous experience.

The most available location for the honey house was a vacant lot next to his home. This required that the building be made to appear as well as a dwelling, for he could hardly put anything less on a residence street in town. In passing by, one would have no idea that here is a business building, instead of a house. The photograph will give the impression of a pretty little bungalow. The outside of the building is finished like the dwelling nearby, is painted white and is a credit to the neighborhood. In case it should no longer be needed for the use for which it is intended, it could readily be finished for a dwelling house.

Kennedy, who, together with his brother and his son-in-law, operates something over 700 colonies of bees, is situated in a sweet clover location where big yields are the rule. His last year's average was 200 pounds per colony, and when I visited him the prospect for a similar crop for the season just past was good. The bees are kept in a series of outyards and the honey is brought home to extract. In such a location 700 colonies of bees pile up a good deal of honey during a short season, and it requires a good outfit to take care of it with a moderate labor cost.

Most of the Kennedy bees are in Modified Dadant hives

Most of the Kennedy bees are in Modified Dadant hives. The big hives greatly reduce the labor necessary for their care. The same thought for labor saving has been extended to the planning of the extracting outfit.

At the end of the building next to the

alley is a bee tight garage compartment. A truck load of honey can be driven directly into this room and the doors shut. This opens into the storage room, where there is ample space to pile up a big crop of honey in the supers until it is extracted. To the left of this storage room is a hot room. This room is tight and heated with steam pipes, which makes it easy to maintain a high temperature. Honey stored there is prevented from granulating and comes to the extracting room so warm that it is thrown from the combs very quickly.

The extracting room is the largest room and occupies the entire center of the building, with windows on both sides to insure plenty of light. The big power extractor is fitted with a honey pump which carries the honey to the storage tank. Some object to the use of a pump because of the tendency to hasten granulation owing to the mixing of the air with the honey. Where the entire outfit is on one floor as Kennedy's is arranged, the pump becomes necessary. Where the honey is taken from the extractor in buckets and emptied into the tanks by hand, it adds much labor. Then, as anybody knows who has practiced this method, an occasional lapse of memory will cause a bucket of honey to run over on the floor. A big muss and the loss of the honey resulting will pay good interest on the cost of installing the honey pump.

The entire building is floored with concrete. There is probably no better material for a honey house floor. If well laid, with a smooth surface, it can be cleaned easily and quickly and will not absorb water and honey in the way of wood. With a smooth floor throughout the building on the same level, it is possible to use trucks with small wheels, which can be pushed from one room to another without difficulty. Two of these Kennedy trucks are shown in the illustrations. The low truck with heavy platform is used for supers of honey and empty combs. The gas pipe ends make it possible to pile the supers high enough to make a good load. The wheels turn in a swivel, which enables one to push the truck into any corner at will. This truck is used to bring the honey from the storage room to the extracting room and to return the empty supers to storage again.

The truck with a high box is for the dripping combs. When the combs are uncapped they are left in this metal lined box until they are placed in the extractor. If the uncapper gets a bit ahead of the machine there is plenty of room to hold several supers of combs. This truck with its load can be moved about in the building to suit the convenience of the operator.

The whole building is planned with the idea of avoiding, as far as possible, the necessity of lifting the heavy supers. This cannot be dispensed with entirely, for they must be lifted from the automobile to the house truck.

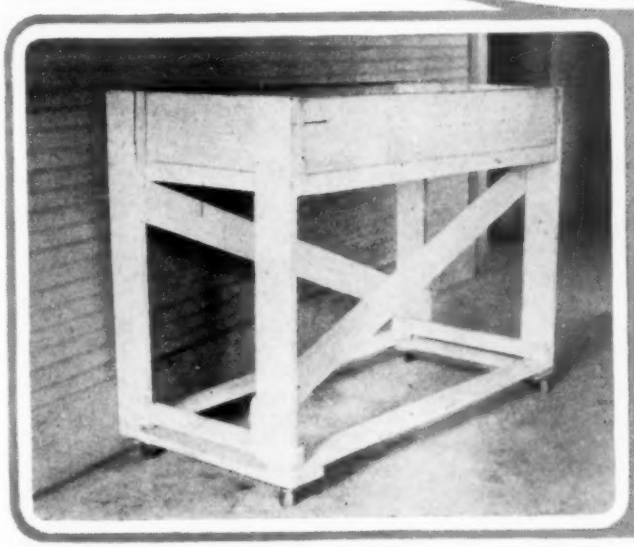
Everything about the place is kept scrupulously clean and neat. Since it is located right in town, visitors may arrive at any minute, and those who come are likely to get a good impression of the way in which honey is handled.

At the end of the building next to the street is a room used for an office. A door enters directly into this room, while another enters at the side of the extracting room. It is thus quite possible to meet a customer and visit with him in the office without taking him into the work room, if it seems desirable.

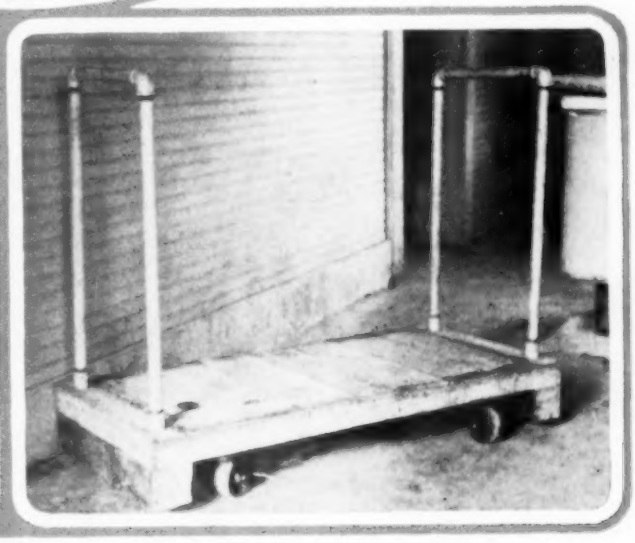
One who is starting an outfit with all new material will find the time well spent to visit several beekeepers and take note of the difference in labor necessary to handle a large crop of honey with different kinds of equipment. In these days of keen competition every dollar saved in the cost of handling the output adds that much to the profit for the season's work.

Building costs are high, but a well built house should last a lifetime. A honey house which is well arranged can be erected at little if any greater cost than one that is inconvenient.

Elmer Kennedy, of St. Edward, Neb., and his son-in-law, Don Burn



This metal lined box holds the uncapped combs, ready for the extractor



Low trucks with small wheels can be pushed about readily, reducing man-power

About Wintering Bees

By R. B. Manley

THE picture on page 523 of American Bee Journal is exceedingly interesting, in view of all that has been written on the subject of packing for out-of-door wintering.

I should like to hear what your view of the case is, as it seems impossible that packing too much could be the cause of such a thing.

It seems to me that whereas opinions may differ as to the value of heavy packing, yet heavy packing alone can hardly be held accountable for the clustering out of bees in zero weather.

The clustering out must be caused by suffocating conditions. But how brought about? I think it attributable to one of two possible causes: either heat generated spontaneously in the sawdust through damp unsuspected by the owner caused a suffocating temperature or bees densely crowded in a small hive may have become uneasy, which led to breeding and a high temperature to which the cluster could not respond by expansion for want of room, except by leaving the hive.

But this leads to a question which has often been in my mind and on which I should much like to have the opinions and experiences of some of the famous beekeepers who sometimes contribute to your pages and to those of other bee journals.

In this country, as is well known, thousands of stocks of bees are wintered every year by old-fashioned beekeepers, in skeps (round hives made of straw) and in boxes, both large and small. Now it frequently happens that swarms hived in boxes or skeps which are large do not fill their home with comb the first summer, and go into winter quarters with about half of their available space filled with comb. At first it would seem that such stocks begin winter under a disadvantage and that the open space in which their combs hang would be very disadvantageous. But in fact, given stores and shelter, they usually do very well.

Again, where stocks are wintered on six or seven combs in, say, a Modified Dadant hive, it seems to be actually of no advantage to them to have the empty space filled up, provided there is a closed end dummy. Again, in nature, bees often build combs in chimneys, hollow trees, etc., places which are always "open" and never filled by comb, and do very well, often remaining for many years in such a place.

In short, in nature bees seal themselves in with propolis when in an enclosed space, but in a hollow tree I have not seen this. It may be that an open space carries off the moisture, which in such a case never wets the sides of the "hive." In a straw skep, which, though usually covered with propolis inside, remains porous in a great measure, bees usually winter very well, indeed. In **unpainted** boxes also bees appear to do well.

It seems likely that this may be partly attributable to the porous material of which the "hive" is made. In thick **painted** hives with sealed covers well made, and non-porous, the moisture-laden air must pass out of the entrance or condense on the walls and run out of the entrance as water. It cannot otherwise escape. In the skep or unpainted box it passes through the walls. I have found that bees are able to keep their combs in better condition in **unpainted** ones and that where plenty of porous material is placed above the combs the same advantages ensue, but I have no experience of heavily packed hives.

Dr. Phillips and others tell us that given enough insulation, breeding will not take place, little moisture will be generated, and absorbents will be unnecessary. I am trying this out this year. I think one point Dr. Phillips made in a letter to me recently is important. Bees must have plenty of room, he says. He advocates two Langstroth brood chambers to house a stock, others one brood chamber and a shallow super (except a food chamber). You, sir, a large brood chamber, in which I am pretty sure you are right. But all these methods give space.

I find that protection afforded by tarred paper over a couple of inches of chaff, straw or other substance has these advantages at the sides. It keeps wind entirely off the hive side, it permits the sun's warmth to penetrate readily, as the dark paper absorbs the heat and warms the chaff behind.

When absorbents are used above the combs, such condensation as takes place does so, not on the walls of the hive, or on the inner cover, but the moisture being closely carried into and through the chaff condenses in the top layer of the chaff under the external covering, which may be tarred paper or what not. This layer of damp chaff is always a thin one, because though the air movement is checked sufficiently to cause some condensation in the upper layer of chaff, yet there is sufficient porosity to allow gradual evaporation and prevent serious accumulation, so that, in, fact, under its top layer the chaff is found dry. This I have amply proved.

The loss of heat can hardly be as serious in such a case as one would think.

In your own system, will you tell us why you believe that the fronts of your hives are better quite unpacked, and why they would not be better with, say, one or two inches of chaff under tarred paper sheet, while absorbing sun heat would not so readily disperse hive heat?

England.

(You will see an article by Dr. Phillips explaining the peculiarity mentioned, on page 523. Replying to your question why we leave the front of our hives exposed, we must say that our hives always face south, southeast or southwest, and that we have often warm winter days, during which the hives become warm enough to permit the bees to take a flight and cleanse their bowels.

Wintering is a problem of locality. The methods of wintering that are quite satisfactory in one climate do not work so well in others. So we follow the methods that appear best to us.—Editor.)

"Shade, Not Grade"

By John Protheroe

I SEE that the Bureau of Entomology now officially "grades" honey by color. There may not be the intention, but there certainly is the effect of creating the impression that the lightest honey is the best and the darkest is the worst. I suppose it is futile to protest against the words, "grade" and "grading"; they are universally employed in marketing—yes, but almost universally used in differentiating varying degrees of quality. Here in Virginia we have a similar kick over apple grading. The famous Albemarle Pippin has defects in appearance that cause it to be graded as a low class apple, whereas all the world knows that when it comes to eating, the Albemarle has got those pretty red things (that look so well in glass and spirits) beaten to a frazzle. There is no heather honey to speak of in this country, yet it is instructive to know that in the retail stores of London and Edinburgh white clover sections bring 25 cents and heather sections 60 cents—the lowest grade color nearly three times the price of the highest grade color.

Personally, I much prefer our dark blend of tulip poplar and sourwood from the Piedmont district to insipid, transparent stuff that would be graded above it. Straight sourwood is darker than white clover, yet it is out-of-sight the better honey. Fortunately the local public is of the

same opinion. Exhibition sections resemble exhibition pullets in that they are a perverted ideal. As the judge is not going to taste the sections, I should get first prize if I could get sections filled literally with water.

No doubt the Bureau of Entomology disclaims any intention of associating color with general excellence; wholesalers demand a grading system and it is giving it to them. The trouble is that the wholesalers want what the retailers ask for—something that looks pretty in a window. I also have suspicions that dark honey looks too much like molasses, as if it were light honey with which molasses had been blended. Producers of superior grades of dark honey have to work from the bottom upwards. They have to give the public a dark honey which many of them will prefer to a water-white. By selling direct to the consumer, they compel the wholesaler, who at first was indifferent, to come round and take notice.

As yet, we have no great cause for complaint in this neighborhood; we have no difficulty in getting a better price for our dark blend than is given for light colored honeys, but we should prefer to see the word "shade," instead of "grade."

Virginia.

Money With Bees

THE following is the account of a beginner's success. It is short, but very much to the point. It was sent to us by C. A. Umoselle, of New Jersey:

Harry Edsele's honey-producing plant in Atlantic county consists of about sixty colonies of bees. His first bees were bought in 1920. One of the greatest problems he had to contend with was the carrying of bees through the winter. The first two seasons, he wintered his colonies in the basement of the house. He had a room boarded off for the purpose, but the furnace in the basement made it too hot, and he had some severe losses from dysentery. The last three seasons he made better arrangements. He dug a cellar outside. It is nine feet deep and is covered by a double roof, with two feet of sawdust between the roof and the hives, to keep out the frost. He believes that this kind of bee cellar is just about right. It certainly has taken his bees through the winter in much better shape. He takes the bees out in April when the willows and poplars begin to bloom. The bees get pollen from these trees to feed the larvæ. About the middle of May, when the summer flowers begin to bloom, the colonies have grown in numbers and are ready to begin to gather honey. His bee yard is well sheltered from cold northwest winds by groups of trees on the north and west sides. He puts on the supers in June. He usually puts about three supers on each hive, but keeps watch and sometimes finds it necessary to put on more. He tries to avoid swarming by giving the bees plenty of room. Just as soon as they become crowded they are likely to swarm and may get away. If there isn't an empty hive at hand, they are likely to take up quarters in a chimney or an old tree. For example, he says, a swarm took up its abode in a chimney. The house, at the time the bees located there, wasn't in use. In the fall, however, some folks moved in and lit a fire. The stored-up honey began to melt and about one hundred pounds of honey came pouring down the chimney. He finds that it pays to spend all of his time with bees during the honey season. He finds something important to do every day, and by keeping on the job he is often able to forestall trouble. Sometimes it is necessary to enlarge the entrances to give more fresh air; it is often necessary to provide shade from the heat of the sun. By giving this attention, swarms are not so likely to occur. He usually begins to remove the honey during July. He does not sell any of the honey in the comb; he extracts it all because he finds this is more practical. He returns the empty combs to the bees to be refilled. After the cells have been filled with honey, the bees seal them with wax. This is cut off with a knife and the combs placed in racks in the extractor. The combs are whirled in a circle and the honey flies out by centrifugal force. The caps that are cut off are drained out and are later made into beeswax, an important by-product that has quite a lot to do with the income of an apiary. Beeswax has been selling at high prices in recent years. The honey is poured into a cloth and strained through this into the tank. The cloth catches the bits of wax, pollen, or other foreign matter. The honey remains in this tank for a few days to settle. During this time the air bubbles rise to the top and disappear, and then the honey is ready to be bottled. It is drawn into pint and quart jars. The honey sells much better in these fruit jars than any other containers he has tried, except when it is necessary to ship it. Then it is more convenient to put it into tin pails. A great deal of his honey is sold on the White Horse Pike. During the season when he was putting the supers on the hives, he would have had a lot of walking back and forth to do if it were not for the fact that he uses a two-wheel cart. His cart has a rack on it which holds twelve supers. When he is taking the supers to the extracting room, he uses the cart again. It saves a lot of extra trips and a lot of backache. It is the same kind of cart that is used to haul barrels of slop for pigs. He uses a standard ten-frame Langstroth hive. He has used some of the eight-frame style, but he prefers the larger one. He finds it convenient to number his hives, even though they may not be used for an experiment. In this way he can keep track of the productivity of the various colonies, and if any of them prove to be unprofitable they can be quickly located. During the time when he is working with his bees in the apiary he wears white overalls and a white bee veil. He finds that the bees are much less annoyed by light colors than by dark ones. He has found honey producing very profitable, and he thinks that the few simple plans that he has described are well worth copying by others who want to raise bees. There is a place for bees on every farm. Even though you may be specializing in some other phase of farming, you can well afford to keep a few hives of bees to make honey for your own family.

Another Waste In Swarming

By Wilbur Sheron

That the division of a colony just at the opening of the honeyflow is a wasteful method in honey production, because it divides the honey-gathering forces just when they should be the strongest, is a fact well recognized in the bee world. There is another waste, due to swarming, that is seldom or never mentioned.

When I called on one of my old customers this fall to sell the usual pail of honey they have purchased for years past, I was much surprised on being told that they had their winter's supply of honey already. On inquiry I found that this family had caught a stray swarm and it had produced them ninety-four pounds of good table honey.

This family was overjoyed at their success. They are planning on more bees. They want a hundred colonies. I have noticed that this is the number that every novice, amateur and beginner aspires to possess.

This colony was caught during the early days of a honeyflow in a year

that will stand out prominently as a banner year for honey production. It gave the new owner no swarming problems. The matter of wintering had not been considered. Next year all this will be different and the ninety-four pounds expected will dwindle down to little or nothing. The owner will then become careless and a menace to other beekeepers. Practical beekeepers will have to keep him in mind and spend hours taking the inspector to his apiary. All this is extra work for the organization and extra cost to the state, and only one chance in a hundred that this owner will develop any real interest in safe and up-to-date beekeeping. This is the other waste—the other menace of swarming.

And it was all brought about because someone let a swarm get away.

Indiana.

Burr-Combs a Nuisance

Do you have any trouble with burr-combs? Then watch the spaces between the top bars of your brood chamber and the spaces between stories. There was a time when I thought that a ⅞ top bar was just right, as it gave the bees plenty of room to pass into the upper story. But one day I noticed that a hive with 1⅛ top bars had next to no burr-combs. I also found out that when I had a half inch or more between two stories the bees would build that space full of burr-combs. But when there was ⅜ inch or less between the stories very little burr-comb was built. The only objection to a space as small as will barely allow a bee to pass is that they will often fill it with propolis, if this material is plentiful in the country and they have nothing to do during the warm days of late fall.

Burr-combs may be done away with almost entirely if the spaces are properly adjusted between the wooden parts of the frames and stories.

The Census of Beekeeping

The Connecticut Beekeepers' Association, in a resolution directed to the United States Census Bureau, calls attention to the fact that the census figures probably represent not more than one-fourth of the actual number of bees. The fact is stated that the value of bees, honey and wax is greater than that of many other agricultural interests listed in the census, and asks that bees in the towns and cities be included so as to secure a complete return. The fact that so many beekeepers live in cities and towns results in the failure to include them in the present census. Only bees on farms are now included.

Japanese Beekeeping

By Yasuo Hiratsuka, Tara, Gifu-ken, Japan

JAPANESE apiaries are all free from bee diseases, with the exception of dysentery, not yet having experienced foulbrood, or the acarine disease.

Winter loss of 1925-26 was very heavy, probably being caused by lack of stores, because the honey-flow the previous fall was very poor and the bees were weakened by robbing. Some beekeepers also think their bees were weakened by working hard in the fall. Some beekeepers lost about two-thirds of their colonies. The spring was also very chilly, so the bees did not build up for the main honeyflow, in May, until two or three weeks later than usual. The flow from the "Genge" (Astragalus sinicus, L.) was very good, and also weather conditions. Our production of honey was very good, averaging about forty kilograms (eighty-eight pounds) per hive.

Japanese beekeepers do not produce comb honey, because there is practically no demand for it, except by tourists from America and Europe, and by some so-called "high-collar families."

The smaller beekeepers leave their bees in the same place, while the larger beekeepers move their bees to the northern provinces, Hokkai-Do, and mountain lands, Nippon-Alps in Nagano-ken, in order to take advantage of another flow there. Some beekeepers move their bees so as to take advantage of the flow from the "Mikan" (Citrus Aurantium) and oranges, extracting some twenty kilos or less of honey. In the western part of Japan, The Kyu-shu, some migrate to the "Haze" (Rhus Suceedanea, L.) and get an average of thirty or more kilos. They then migrate to the northern lands. This is about the first of June, or later. In the "Hokkai-Do" the rape blooms about this time. Then the white clover flow comes about the middle of July. If the condition of the bees is good, about forty kilograms of extracted honey are taken. Then they migrate to the "Shina-no-ki" (Tilia cordata. Mill.) the "Hagi" (Lespedeza Bicolor) the buckwheat, etc. They migrate at least three times in the Hokkai-Do, taking about four or more kilos every time.

On the other hand, some who transport their bees into the Nippon Alps in the Nagano-ken leave the honey for the bees to winter on.

They take their bees back home in late October from the Nippon Alps with plenty of stores and do not feed during the winter. However, the bees from the Hokkai-Do have to be fed, because the honey is taken off, with the exception of enough to feed them while they are on the way home, because too much honey in the hives then is dangerous. Hence the bees from the Hokkai-Do are fed at home or on their wintering location. In this way, Japanese beekeepers produce honey about four times, getting about 350 or more pounds (160 kilos) per hive. They keep at least 100 hives. This number is about right to load in a car, although some keep 600 hives, and some 1000, which they scatter in many locations, keeping about 100 hives in a place.

Extracted honey is sold at about .40 per kilo, 9 cents per pound.

Migration is made by railway in the mainland, while automobiles are used in the Hokkai-Do. Some migrators move the bees in a single-story hive with screened windows in the bottom, front and back, packing the supers in the same manner separately. Others nail the bodies and supers together with a strip of wood. Some also take the bees in three-pound packages, with two or three frames for feed while en route. In this case, the frames, brood and honey are carried in a separate box having no bees, except a few workers, and some bees emerge soon after they are placed in the hives.

Our bees are almost entirely Italian and Italian hybrids, although some prefer the golden bees for their beautiful color, believing that the yellower, the better, for production. There are practically no wild bees of European races in Japan, so that there is very little trouble in keeping the race pure. However, the average beekeeper does not care whether his bees are of pure stock or not. Hence the average bees are not of pure blood.

Japanese people favor the colorless honey, while the Chosenian (Korean) people like dark honey, such as buckwheat, as they are more familiar with this kind.

The "Genge," the "Mikan," the "Hagi," and the white clover honeys are all colorless, while buckwheat, the "Naginata-Kouju" (Elsholtria Patrini) and other fall honeys are of amber color.

The honey is sold in used gasoline cans for packing economy, while retail packages are one- and two-pound glass jars.

The native honeybee is the Apis Indica, var. Japonica, which resembles the Chinese native bees, a peculiar race of Apis mellifica. However, these are being discarded, as they are not so productive as the European races. The wild bees are only seen in certain mountain regions. Japanese native bees, as well as Chinese native bees, do not mate with the Apis mellifica.

Scented Foliage as an Attraction to Bees

By John H. Lovell

Bayberry. The leaves are resinous, dotted on both sides, and leave a pleasant, aromatic odor.

"IT is," says Knuth, "usually the flower which is odorous, but in individual cases the smell of the foliage and of the stem is obviously an attraction to insects." This is highly probable, and doubtless leaves with a pleasant scent do attract insects to some extent; but experimental proof of this statement is difficult to obtain. The little black bees of the genus **Prosopis,** which themselves have a strong odor, have been said to prefer plants which also have a powerful smell, as mignonette, rue, fennel, peppergrass, and yarrow. I have had the bees of this genus under observation for many years and have collected them on a great many flowers, and I find this statement far from true. I find these ant-like bees most common on the blackberry, **Spiraea,** the prickly sarsaparilla **(Aralia hispida),** the goldenrods, and gathering pollen on the wild roses.

On a hot, calm morning I placed a small geranium plant **(Pelargonium),** consisting of one large truss of crimson flowers and sixteen leaves, in front of two hives of honeybees. Neither nectar nor pollen was obtainable. So far as I could discover, the flowers were odorless, but the leaves were strongly scented. From time to time a bee hovered over the flowers, inspecting them, or alighted on them momentarily. Only two bees alighted on the leaves.

The following day was fair and the experiment was repeated. The flowers received four inspections during which the bee hovered over them; two inspections during which the bee touched them for a moment, and four visits—the bee alighting on them. The leaves received only a single inspection. The odorless flowers received much greater attention than the scented leaves. Clearly it was the color and form of the flowers which gained the attention of the bees, while the scented leaves influenced them very little.

That bees are attracted to bright-colored flowers, which are wholly scentless, was shown by the following experiment: From blue, yellow, red and white papers I cut out eighteen five-lobed circles, or discs, which I pinned to the tops of slender wooden rods placed a few inches apart. These paper artifacts were, of course, absolutely scentless. A small child to whom they were shown exclaimed, "Pretty flowers!"; thus they might be expected to attract the attention of bees. During ten minutes these crude artifacts received many inspections, and three times a bee alighted on them. When odorless sugar syrup was placed on the paper "flowers" they were visited by many bees and flies. It is not necessary for flowers to possess odor in order to attract the visits of insects.

But it is far from certain that all strong odors, as those of essential oils, are attractive to bees. Graber was of the opinion that there are a large number of substances with strong odors that affect insects in a disagreeable manner. The Peckhams, in their experiments with wasps, found that while they seemed very keen of scent where animal matter was concerned, the powerful oils of peppermint and wintergreen, although noticed, aroused little attention, perhaps because they indicated nothing of interest to them.

Plateau himself obtained only negative results in his experiments with essential oils. Lavender water, when put in the flowers of **Lilium candidum,** attracted no insects. Equally futile was the introduction of oil of mint into the flowers of the common day lily. Other similar experiments were equally unsuccessful. His conclusions were as follows:

The essences used had little attraction.

Essence of mint was rather repellant.

The only essences which attracted feebly were those of thyme and sage.

In the mint family (Labiatae) the flowers are very frequently visited by bees, and the foliage of many species yields a strong essential oil;

Roman wormwood, Ambrosia artemesifolia, a coarse weed with strongly scented foliage.

but there is no evidence that the penetrating scents of the leaves attract bees. I placed anisette, which has been thought to be especially attractive to bees, in five flowers of portulaca, but during an hour not a single bee was attracted to them.

Scented leaves probably do not play a very important part in attracting bees to flowers. Essential oils appear to be either repellant or only feebly attractive. Probably leaves with pleasant odors occasionally attract the visits of bees; but finding no food, the bees remember this experience and do not often repeat their visits. Maine.

Dead Brood (Page 530, A. B. J.)

Is there any danger of this turning into foulbrood (this chilled brood)? Miller said, "I don't know," but you do not answer that question at all.

I would like to know, too: Is there any chance that chilled brood turn to foulbrood? California.

Answer: Yes, there is danger if there are any germs of foulbrood in the country. It is more probable that disease would attack a colony weakened by loss of brood than a healthy one. But if there are no germs of disease in the vicinity, I don't think dead brood would bring them into existence.

This is only an opinion, and perhaps I had better reply, like Dr. Miller: I don't know.—Editor.

California Not All Oranges and Sunshine

By H. W. Sanders

BEFORE we came here to live, we used to read in the bee books about the great yields of honey in California. The state was reported to produce half of the entire exportable surplus of the country. In the market reports they always dealt with California first, and not a bee book but had pictures of tremendous apiaries. Usually these stories ended with warnings to prospective beekeepers that all the territory had been taken up and that there was little, if any, more room. For example, here is what one book said: "There is not much open territory left (in southern California), but more will be available as soon as the roads can be run up into the mountain country where sage is abundant. The citrus groves are expanding very rapidly and these in time will open up more bee range." These warnings, and the published figures of immense honey crops made us expect a land with bees in sight every mile or so.

The first shock came in the train when journeying here. A fellow traveller had recently spent a couple of days driving around in the Imperial Valley. On our remarking that it was a famous location for beekeeping, he said that in his two days he had not seen any bees there.

In due time we settled here in an outlying suburb of Los Angeles, to live the ordinary life of a commuter, and to study the possibilities of getting some bees—somehow it did not seem quite like home without bees, after having had them for a number of years—and on Sunday afternoons we joined a couple of other million cars on the highways. Of course, we looked out for bees. We drove miles and miles through orange groves with their golden fruit, dark green foliage and clusters of waxy blossoms. We could smell the fragrance a block away. Did we see the vast apiaries we had expected? We did not.

It was about a year after the weekly auto drives had started that we saw some bees. Then we glimpsed a fairly big yard among the foothills just at the edge of the sage ranges. Since then we have been discovering others, as well as scattering groups of hives in backyards, but we are still unable to explain the statements in the books about the locations all being taken. Either the bees are well concealed or else there is an enormous amount of orange honey not gathered. We will guarantee to take any beekeeper for a hundred-mile auto trip in southern California amongst the orange groves, when they are in bloom, and he will not see any bees—or at any rate not more than one or two outfits.

Here it should be stated that nobody should jump to the conclusion that there is any easy money to be made in gathering honey from the oranges as above mentioned. Taking one season with another, beekeepers here have been struggling along against heavy odds during the past few years and only the best equipped and most expert have survived. Those who have fairly good locations elsewhere are well advised to remain.

However, for the sideliner, the amateur who wants to keep a few bees in his back yard, conditions are wonderful in the suburbs of the city here. The great fear of the large-scale beekeeper is drought, for unless the rains come up to expectations the sage ranges do not yield. Even the orange groves, though irrigated, do not always yield well if the weather is too dry. But here we are in the midst of homes and gardens and everyone waters liberally. There are an enormous number of minor sources of flow, so that we find new nectar in some quantity in the hives at all times of the year. This continuous light flow keeps the bees breeding almost without cessation, but they do not get strong except under careful management, and then only in the spring of the year, the bees' natural swarming time.

The weather is such that there is seldom a day when the hives cannot be opened. Of course, we must watch against foulbrood and robbing, and the one usually means the other unless one is careful. There must be perpetual vigilance in this respect. Also, moths will destroy any combs left out of the care of the bees, unless they are well fumigated, in short order. With those provisos the amateur beekeeper may enjoy himself to his heart's content.

Along about Christmas the eucalyptus trees begin to put out their curious wooly blossoms, and the bees gather at that time a dark, sticky, smelly mess that we blame on the eucalyptus trees. However, there is enough of it to provide stimulation, and it is at this point we practice spreading the brood. An article in one of the bee papers a couple of years ago suggested that there might be reasons why this practice would be good here, though condemned elsewhere, and so far as the experience of two seasons goes it has so proved. We spread the brood cautiously and watch the colonies grow.

Then there happens, in this climate, something that catches the beekeeper from other parts quite unawares. If the weather should strike a certain combination the colonies dwindle down as fast as they came up. To humans the combination of a bright and warm sun and a faint cool breeze is pleasing. To bees it is death, for they fly from their warmed hives just as in summer, and the cool ocean breeze chills them just enough so that they do not get back home. The hope of a crop depends in large measure on the weather at the critical time, just as it does anywhere else. Some years we get rapid dwindling at this time, and sometimes none at all, in which case there will likely be heavy swarming under the stimulus of the light flow.

Then in March or April (the exact dates vary a good deal) the orange trees come into full bloom, and in a suburb like this one we have them in every garden. We have found the orange honey to be very good, quite as good as it is supposed to be and much better than some honey that we have bought for orange honey by the roadsides, but which we suspect to have been more or less mixed with honey from other sources.

The California climate is quite indescribable. It fills the visitor from the East or Middle West with amazement, for everything seems turned upside down. For example, we do our gardening in the winter time and we often wake up in the morning to find a light trace of frost on the rank grass, four feet high on vacant lots. It will be then cold enough to make one glad to sit by the fire, or wear an overcoat when out. Two hours later you have summer, with perhaps that cool breeze from the ocean we enjoy so much and the bees so little. Then at four in the afternoon it begins to get chilly, and after supper you are around the fire again. Meanwhile everything is growing to beat the band, and the gardens all around are filling with roses, while the bees are getting ready to swarm.

Then in May the rains cease for their six months off season and things begin to dry up. Evenings, while cool, are no longer cold. Days are longer and everybody thinks about vacations and trips. Gardening is put off till the wet season, except where one is willing to water and take great care of the work. The deserts and hills dry up. Summer is upon us and we get some few very hot days, but not many. Most of our days are pleasantly warm, with cool nights, and there are no mosquitoes and very few flies.

Three years ago, when we were first here, every roadside stand had honey at what looked like disastrous prices for the beekeepers. One could

get a quart bottle of very good honey for 40 or 45 cents. There was plenty of comb honey available in the Los Angeles stores. This year the markets are swept bare. One pays 75 cents for a quart of the best, and comb honey is not often seen on the markets. For the beekeepers' own sakes, let us hope that when prosperous times return they may avoid glutting the markets. In the American Bee Journal it says: "Large quantities of honey have had to be imported (into California). . . We must not lose sight of the fact that California is rapidly accumulating a manufacturing population which will use large quantities of our product. It is not improbable that in years to come California may not be such a large shipper of honey as formerly. The present year indicates what would happen should the bulk of the harvest of California and other large producing states be consumed at home."

The above is one of the wisest things that have been said on marketing for many a day. Beekeepers often keep their eyes fixed on production till they forget consumption altogether. Here, in the immediate vicinity of Los Angeles, there are now over a million people. Any beekeeper who will take the trouble to make a house-to-house honey selling campaign next time there is a crop will find thousands of people at his doors who will welcome California honey as a discovery.

California.

From the Dominican Republic

By Joseph Braun

In the September issue of the American Bee Journal, page 476, Dr. Maldonado, of Sanchez, calls this country a beekeeper's Paradise. The doctor is very enthusiastic, and no doubt wishes for permanent peace; I do so, too, but am skeptic. About sixteen or eighteen years ago a kind of bee fever seized this island, bee yards sprang up like mushrooms and many disappeared about the same way. Any quantity of hives were eaten up by wood lice (fermits). Many would-be beekeepers just set them and their factory-made stands or bottom boards on the ground. That does not work in a warm, damp climate full of ants and other bee enemies.

When we get the honey, we can get about 3 cents a pound for it. The small beekeeper, most all are small, gets 20 cents for his wax. Comb foundation costs here $1.25 a pound, seven sheets standard size, not wired, to the pound. We have yet many old-style beekeepers. Their hives are hollow logs or a cut of about four feet of royal palm cleaned out. The swarm is put in so that with one or two sacks put over it, doubled up or down over the ends to shut off the big opening, the fixture is complete. It's cheap to begin with. When he robs them, well he does rob them, he cuts out what he can until he gets in to the brood nest, green, ripe and brood, and that is all squeezed together and named honey. The merchant buys everything without distinction; he pays the same for good and bad, and of course the foreign market accepts all at the lowest price.

In some talks to the students of the Agricultural College about bees, I urged upon them, if they ever do anything in bees, to form a cooperative, for the purpose of education, buying and selling, to adopt a trademark and sell or export, under that, only clean and ripe honey. Excellent honey is produced; the only doubtful stuff is from habo, or hog plum. Extracting should be done before that time. Generally a scarcity follows that bloom, so the bees could use that up. I make a concrete base with a raised rim 2 inches high, two pairs of concrete legs 10 inches high, set in so that a ten- or fourteen-frame Modified Dadant hive sets on top. Water in the base when necessary keeps ants and wood lice away.

The Cliff-Bees of Australia

Mr. Tarlton Rayment, who writes occasionally for the American Bee Journal, has published a very interesting article of eleven pages, with a plate, in the "Victorian Naturalist," on the above subject. His studies show a great deal of similarity with those of the famous entomological observer, Fabre.

Who Said Buster Was Afraid of Bees?

At the annual food show held at the Cincinnati Zoological Gardens August 30 to September 11, inclusive, over 200,000 people were spellbound to see this youngster handle bees.

He is Clifford Muth, Jr., or better known as "Buster," the fourth generation of the Muth family interested in bees.

At the food show, which lasted ten days, there was an average daily attendance of 20,000 people. This was a wonderful opportunity of presenting to the public a novel way of thinking about honey. Clifford Muth, Sr., gave talks on the habits of the honeybee and the uses of honey in the kitchen, followed by a demonstration from "Buster."

Strong Colonies for Harvest

(Photo by Etienne Giraud, President of the Association of French Bee Societies)

In our editorials for August, page 409, we mentioned the manner in which Messrs. Wilson and Benton, in Le Gatinais, obtained extra strong colonies for the harvest by buying skeps of bees at low prices and placing one near each strong Dadant hive of bees, then removing the skep to a new spot when the harvest came on fully. The accompanying picture shows this arrangement of a straw or clay skep near each colony. When the skep is removed, all its field force is thrown into the colony remaining on the old spot, thus nearly doubling its field force.

The visitors are members of the Apis Club, then on a tour in France among the beekeepers.

As Others See the Bee

By Floyd Byrnes

WHEN praising the honeybee, so California farmers, at least some of those in the great San Joaquin Valley, say, consider the woes of those who toil beneath the rays of a California sun in orchard or vineyard, and discount the value of the bee in just proportion to the damage she does to the other crops while piling up her own. Californians want the honeybee, but they do wish she wouldn't be so darned "pestiferous."

It is a mooted question just now in the Golden State, where vineyard owners and growers of peaches, prunes and other orchard crops are trying to prune off the vine and tree in readiness for the new season's growth, soon to start, and the relative merits and demerits of the honeybee are coming in for quite generous consideration by university experts and practical growers.

1. Last summer the bees so persistently buzzed about the drying yards and sheds and in the peach canneries that the city of Visalia was asked by one cannery manager to pass a law—which it did not do—relegating the busy little bee to realms outside the city limits. Bees sought out the sweets of the cannery, nor could screens shut them out; they also were as attracted to the pretty girl canners as are boys, and when they arrived in thousands canners and cutters quit by scores, all of which made excellent freak newspaper reading. Came a time, however, when the bees found their way into the cans of fruit and were sealed therein, and when one cannery lost a $50,000 foreign order because three busy little bees were discovered nestled inside a half peach following a trip across the Atlantic, the matter was taken downright seriously. Big suction fans were installed and disaster came upon the bee colony from whence the intruders had come—and since that time the colonies have been moved to a safer distance.

2. It is, however, just during the pruning season in the vineyards and orchards of the San Joaquin Valley that the orange blossoms break open and thousands of colonies are transported from one end of the state to the other as owners hasten to the golden flow of honey. This movement of bee colonies has been heavier this season than ever before, it seems, with the result that labor in the adjoining vineyards and deciduous orchards is at a premium, and the time wasted by those wielding the pruning shears in fanning bees away from their heads is costing the vineyard and peach and prune growers money, so much so, in fact, that they are wondering if there is anything that can be done about it.

3. One peach grower, Dooley P. Wheeler, of near Exeter, California, however, now declares the bees actually eat the buds from the trees, an assertion which has aroused tumultuous pro and con discussion. "It can't be done," says the University of California, "for the bee hasn't any mouth attuned to biting."

"Scientifically that seems to be the case," replies Dooley, who is himself a horticultural inspector, "and the argument seems to be in favor of the bee, but the actual facts seem to indicate an opposite conclusion just the same; and if the bee can't bite, it must suck or chaff the bud so seriously as to injure production." And Dooley points to his own excellent orchard of peaches, asserting that he got an average of four good peaches per tree from it last summer after bees were more plentiful therein than ever before.

4. Another grower of grapes of the vicinity reported it cost him five dollars more per acre to prune his vines, because his men had to battle bees most of the time they should have been working, and still another insists dodging of honeybees in his vineyard, coupled with blossom damage, cost him 10 per cent of his crop.

The facts are that this bee nuisance has had its effect in prompting a new pruning method for vines, which is being applied quite generously this winter throughout the entire district and may in itself work to the benefit of the grower after all, for now experts seem of the opinion that less pruning of the vine and more thinning of grapes next spring—when there are no bees about—should produce a better crop anyway. Growers who have experienced the sting of the winged honey builder, or felt the loss in dollars and cents, have been happy to make the experiment, and next summer may prove this point conclusively. If it works out, as experts believe it will, the whole problem insofar as the vineyards are concerned will, perhaps, have been solved. Then it will be up to the deciduous grower to figure out his own problem in his own way, and he has usually been successful in doing this.

While the bees are after the or-

ange blossoms, just at present there isn't any pruning going on in the orange orchards to speak of, although there is some picking of navel oranges; in fact that job is right at its height, but thus far no orange grower has complained. Probably the orange grower makes so much money the loss of a little by pickers dodging bees wouldn't worry him anyway.

California wants the honeybees. It's a big crop for the state, but Frank R. Brann, Tulare county's horticultural commissioner, admits he sees no way for the farmers to do but continue to dodge the whole problem or else call in the service clubs of the cities, of which Brann is a loyal member, and see what they can do.

Remarks of the Editor

We publish the above article because it brings out what we call "popular errors concerning bees."

1. Screens do keep out bees, and not only bees, but also house flies, wasps and insects in general. The great trouble with the "canners" is that they consider that the owner of bees ought to keep them away, while they are quite willing to cope with flies. Laws to forbid the keeping of bees within the limits of a city are not legal and are set aside by the Supreme Court. Besides, bees fly quite a distance and would come from outside of the city. The only thing to do is to use screens, just as beekeepers do when they extract honey. Then the "pretty girl canners" will not suffer from either bees or flies.

2. The possible injury to the pruners of grapevines in the vicinity of an apiary is imaginary. We have both bees and vineyard and there is no trouble from bees in the vineyard.

3. Without insects, bees especially, the orchards, especially peach orchards, would produce no fruit. The proof that insects serve in fertilizing the blossoms is to be found in the fact that a peach stone rarely reproduces its own kind, because the bees carry pollen to the trees that are short of pollen (usually the large varieties) from the varieties of small peaches, which always produce pollen in abundance. Most fruits increase largely in their crops by the abundance of visits of bees to their blossoms. This was very clearly demonstrated in the 1200 acres of apple orchard mentioned in the February, 1926, number of the American Bee Journal, page 70.

4. Any man who knows anything about bees knows that a bee will seldom sting anyone away from its hive. —Editor.

Hands Across the Borders

(Photo by Etienne Giraud, President of the Association of French Bee Societies)

This picture represents three men of different nationalities: Alin Caillas, officer in the French army, author of "The Treasures in a Drop of Honey" and of "The Products of the Hive"; Ph. J. Baldensperger, a Palestinian whom all our readers know by reputation, and Dr. Armbruster, of Germany, who has made many scientific studies of the bee. They met at the Apis Club convention, in France, with many English, French, Swiss, etc., beekeepers. The next congress of the Apis Club is to take place in Switzerland, in 1928. Nothing is better to do away with the idea of wars, of selfish nationalism, than these meetings, where men of high education realize that they can help one another if they set aside the ideas of frontiers or international fences. These are the only possible symbols of international peace.

The Poisoning of Honey Bees by Common Orchard Spray

(The following note by A. I. Bourne, of the Massachusetts College of Agriculture, is copied from a recent issue of Science. Beekeepers in orchard districts will do well to call these facts to the attention of fruit growers where bees are present.)

Recent studies made by the Massachusetts Agricultural Experiment Station have indicated that there is little danger of significant mortality of honeybees from the spraying of orchads, provided that the recommended combination of lead arsenate, lime-sulphur and nicotine sulfate is used.

In laboratory tests, bees were strongly repelled by this regular spray combination (lead arsenate, 1½ pounds to 50 gallons; lime-sulphur, 1:40; and nicotine sulfate, 1:1,000). This mixture, however, even when consumed in minute amounts, proved to be very toxic to them and was rapid in its killing action. Lead arsenate spray was readily accepted. A one-frame nucleus to which this was offered lost approximately one-half of its bees within forty-eight hours after feeding. Any mixture containing nicotine sulfate was very repellant to the bees, and they would feed upon it but sparingly. This strong repellent action persisted for a considerably longer period in the laboratory than in field tests, and appeared to vary according to the volatilization of the nicotine.

Under Massachusetts conditions, the orchard sprays applied nearest the period of bloom are the pink and the calyx. No sprays are scheduled to be made when trees are in full bloom. Neither of these sprays, made when there was considerable bloom on the trees, caused any serious mortality to colonies located in the sprayed orchards. Following the late pink, trees soon came into full bloom; after the early calyx, the bees repelled by the spray doubtless foraged in neighboring orchards. In both cases they found an abundance of unpoisoned bloom upon which to work. This would indicate that improper spraying must be carried out on a large scale to visibly affect colonies not subject to any restrictions of flight.

Novelty Brings Publicity for Honey

By A. A. Shields

"NOW the tempo of life has increased materially since the war. This is an age of action. We want things and we want them quickly. . . We like things that are vivid and spend no time on things that are dull and drab."—Andrew L. Carmical, in Advertising and Selling.

Is honey dull and drab? No. When honey gets the attention of this busy public, it does it through the two opposites of dullness and drabness. That is when you find people interested in honey because of these two opposites—novelty and beauty.

Novelty, and nothing else, made the readers of Chicago sit up and take notice when it was published that the model golf caddy who was missing from home hadn't been murdered, as was feared, but had run away because he couldn't have honey on his pancakes!

What a boost for honey for children—he didn't want mere jam; it was honey or nothing! The papers "ate it up" and gave it prominent position, with pictures of "Mother's Honey Boy" eating on his return. An A1 press agent for the honey producers couldn't have done any better; it's good enough to make a movie star's publicity man envious.

"Secret Is Out at Last! Maharajah Dotes on Strained Honey!"—headline across six columns when a reporter in Los Angeles got the first interview the ex-maharajah of Indore gave out in this country. Sheer novelty again.

And what happened when Prudence Penny, who conducts a Household Page for the Hearst papers, featured honey in the leading article on one of the pages in a Chicago paper? The desk man who edited her copy read far down into the article and dug up for the second "deck" of the headline:

"Bananas Baked in Honey and Pumpkin Pies with It as an Ingredient Are Novel Dishes."

Incidentally there are Prudence Pennys in each city where there are Hearst papers. This particular one was conducting a cooking school and was demonstrating the cooking of waffles and suggesting using honey with them to her hearers.

No matter whether honey producers know it or not, it is still a novel fact to most people that honey is used by the bakeries. And when some of the writers and some of the advertisers discover this fact they want to pass it on.

"Cakes and cookies made with honey keep fresh longer than when made with sugar alone, and so we find that big commercial bakeries are extensive users of honey, which they purchase by the carload," said Arthur E. Albrecht, in an article on "Is Honey Just Honey?" in the February, 1927, Ladies' Home Journal.

He couldn't have written better advertising for honey if he'd been paid for it, especially when he added in the next breath:

"Honey, like milk, reaches the consumer's table untouched by human hands."

You will find the bakeries remembering that novelty is an asset in this day of quickened life. They recognize that methods of retailing

Toast and Honey
We all know the nursery rhyme about—
"The queen was in the kitchen, eating bread and honey"
Toasted bread and honey, of course.
Feast on crispy slices of hot buttered toast with generous helpings of thick golden honey.
New England Bread

Single column ad in New England paper

are different. Consider the effect of the automobile. Many towns are more accessible; shoppers can come longer distances. Because of this, Dollar Day and the Trade Day have sprung up. All business men are supposed to feature bargains so as to lure a larger crowd. At first, the wearing apparel and dry goods stores seemed to profit most, but now more lines are being featured.

Instead of merely cutting a price on an established product, the Federal Bakeries of Danville, Illinois, featured a new product at a bargain—"Honey Raisin Bread." Generous newspaper space was used, the bakery at each location having a separate space. Repeated emphasis was given to the statement that the bread was made with pure honey.

Here is just a glimpse at how the bakeries try to avoid being dull and drab when they mention that they use honey:

"Milk and Honey—From time immemorial the expression 'Land flowing with milk and honey' has been accepted as a fitting description of an ideal land. Honey has always been significant of the most pleasing and wholesome foods, and it is the free use of pure honey in Shelley's macaroons which gives them that delicious, palatable flavor which makes them so popular as a lunch-time confection, or for parties and picnics. . . "— Shelley's Bakeries, Vancouver, B. C.

"Remember the loaf of bread I mentioned to you the other day? I have found out all about it." (One woman is talking to another.) "The reason for the distinct flavor is because it is made from—flour, sweetened with honey and made with fresh milk. No wonder we liked it so well." — VanDyk Bakery, Passaic, N. J.

"We have secured an expert from Cleveland; he is going to make something novel—honey to take the place of ordinary sugar. We have tried these Honey Pecan Rolls and think they are simply great. . "—Alberth's, Akron, Ohio.

Further emphasis for the need of novelty in advertising honey is given by advertising experts. A writer in Printer's Ink, in referring to a honey campaign conducted by Hoffman & Hauck, commented:

"The main appeal is along the lines of suggesting new uses or uses which are little known. How many women, for instance, know that beans and honey are not at all a bad combination? 'Make Your Next Pot of Beans with Honey,' is the headline which advances the suggestion."

Even material which is sent out by organizations can be made more interesting by including facts that are little known by most persons, and especially unknown to most women. An excellent example is found in one of the short articles on honey which are supplied to newspapers in the state of Washington by the Extension Service of the State College of Washington. Such things as these will get the attention of women:

"In mixing doughs, less flour will be needed when honey is used for sweetening, if the dough, a little too soft to knead, is placed in a covered bowl and allowed to stand in the refrigerator for twenty-four hours. (And years ago women couldn't save flour, because they didn't nearly so many of them have refrigerators, especially in the country. There's the changing tempo of life again.—A. A. S.). The less flour used in cake or cookie making, the tenderer and more delicate are the products."

"The best flavors to be used with honey seem to be dry, ground spices. The following mixture is particularly good . . ."

"Honey needs a little extra salt, so . . ."

And, by the way, the Washington State College service doesn't hog all the credit. It supplies each paper with an art heading, "Honey," showing a hive and **flowers** and **peaceful fields,** and lettering that says that the information is prepared by the service "cooperating with this paper."

Novelty can be found in bees themselves; the public likes to see them at work. Didn't Joseph M. Mundell, of Hobart, Indiana, get Sunday newspaper publicity on his roadside marketing of honey? The Chicago Tribune said:

"Directly across the road from the roadside stand, Mr. Mundell has two billboards, 10 by 16 feet, set in 'V' shape, so that tourists coming from either direction can see them. Live bees crawling in and out of the skeps, or twisted straw hives, painted on each end of the boards, add a unique and attractive feature. This takes them out of the class of ordinary outdoor display advertisements.

"Hives with strong colonies of bees are fastened to the back of the billboards. Thousands of bees cluster around the entrance of the painted skeps, and the workers passing in and out are more effective in attracting the attention of tourists than the winking and darting lights of an electric sign."

The advertising value of working bees was told by Dirk P. DeYoung in describing the methods of the Morgan Motor Company, progressive automobile dealers, in Ford Dealer and Service Field:

"One of the Morgan Company's advertising ideas is a hive of bees in its show window on Broad street, Newark, the main street of a city of half a million people. Through a pipe running from the hive to the ceiling, the bees go in and out of the building to gather honey in the parks and gardens of the city, while on the hive itself is written: 'Numerous, dependable and highly productive. Faithful and intelligent workers which remind you of Fords.' Mr. Morgan has a large colony of bees on his place in Newark, where among them, and in his garden, he gets his recreation. . . The window displays, including the hive of bees, catch the eyes of thousands, many of whom stop and look, and also listen, as Morgan himself, a splendid mixer, frequently joins them, explaining the peculiarities of bees, who wander all about Newark gathering honey and then come home to roost at night again, in a metropolitan section of rows upon rows of brick buildings, which to a bee should all look alike. In that way hundreds of people come to know the Morgan Motor Company and the head of the house, whose kindly ways and intense humanness make him many friends.

"Not long ago the company offered a prize for the best slogan connecting the hive of bees with a Ford, which was won by a Newark school teacher, and was as follows: 'You May Be Stung by a Bee, but Never by a Ford.' "

Dullness and drabness in beekeeping and honey marketing? Not in that portion that the public gives its attention to in this rapidly moving age.

From England

Here in the South, after June we had a worse and very much wetter July, which was succeeded by an equally wretched August, and then followed one of the wettest Septembers on record. A very few days of comparatively fine weather during the last week of July and three days first to third of August enabled a little honey to be stored, and that is all. In October we had our first really fine warm spell, after most stocks were packed up for winter. Thus it has happened this year that we had a week of summer weather just before the bees were unpacked in spring and another just after they were packed in October, but no week of summer between. Only on one occasion were there three fine days consecutively, and that was in August.

R. B. Manley.

Federal Bakery's Special For Trade Day

Made with Pure Honey

Honey Raisin Bread

Something new with a taste all its own. No burned taste like regular raisin bread.

15c

Regular 20c Size Loaf.

You will like it. Chuck full of big juicy raisins and a flavor all its own. Made with pure honey.

We Bake the Bread and Rolls Advertised by Fleischman's Yeast Co. in the National Magazines

Federal Bakery

105 North Vermilion Street. Phone 1073.

An increasing use of honey in the bakery is a hopeful trend in beekeeping

The Body Temperature of the Honeybee

By Dr. E. F. Phillips

ARTICLES have appeared in the American Bee Journal regarding the body temperature of the individual bee from the pen of Dr. K. Brunnich, of Switzerland, in which he claims, from experiments with the use of admittedly rather crude instruments, that the bee has a body temperature considerably higher than that of the surrounding air. In opposition to this view, Pirsch some time ago published a paper in which he gives the results of careful observations with accurate instruments and in which he shows that the quiet bee has a body temperature the same as that of the air surrounding it, except that at unusually high or unusually low temperatures there are differences which may easily be explained on the basis of physical phenomena. Which of these authors is to be accepted as correct?

It is fair to assume that many readers of this Journal looked on Dr. Brunnich's articles as of theoretical interest only and considered them as rather outside the realm of beekeeping practice. Such an assumption is wholly an error, for questions of temperature of the bee's body and of the hive are the most important practical questions which one meets in the devising of the proper methods of caring for bees correctly. It is then chiefly with the hope of bringing beekeepers to a realization of the practical nature of this problem that a fair statement of the case is undertaken.

Dr. Brunnich states that the drone has a body temperature of 48 degrees C. (118.40 degrees F.). For workers, he gives 39 degrees C. (102.2 degrees F.), and for brood 45.2 degrees C. (113.36 degrees F.). If the drone had any such body temperature, a beekeeper on picking up one of them would unquestionably feel the heat, for 118.4 degrees F. is not by any means a low temperature for animal heat, being over 20 degrees Fahrenheit above the temperature of the human body. We may grant figuratively that at times one part of the worker's body is decidedly "hot," but speaking in terms of temperature and not in terms of our own sensations, we make no such claim for them. A temperature of 48 degrees C. is higher than the thermal death point of all mammals and is almost as high as the temperature of the hottest hot springs in which any animal life is ever found, the absolute top limit of temperature being given as 52 degrees C. At far lower temperatures than this many cold-blooded animals begin to show signs of degenerative changes due to temperature, changes which ultimately and sometimes quickly lead to death of the animal. It has so far not been determined what the high limit of temperature is for bees, and on one occasion I ventured a guess that the high limit may be as much as 130 degrees F. (54.44 C.), but I am now quite convinced that my guess was an exceedingly poor one, being far too high. It is seriously to be doubted whether a bee could live for more than a few minutes with a body temperature as high as Brunnich gives as entirely normal. It would be an exceedingly rare occurrence for a bee to be exposed to a temperature as high as he gives as normal, and doubtless any continued exposure to such a temperature would result in death. Here is a field of experimentation of theoretical interest only, but I should like to see someone try it.

So far as I am aware, no reputable investigator before Dr. Brunnich has ever suggested that the bee is not a cold-blooded animal, barring one Polish beekeeper to whom he refers. All insects are cold blooded, and in fact all animals other than vertebrates are cold blooded. The lower vertebrates also, such as fish, frogs and snakes, are all cold blooded. By the expression "cold blooded" we mean that the temperature of an animal's body is the same or very nearly the same as that of the medium in which it lives, a condition more accurately designated in scientific work by the adjective poikilothermic. For cold-blooded animals living in the air, the temperature is about the same as that of the surrounding air, while for cold-blooded animals inhabiting water, the temperature is about the same as that of the surrounding water. In both cold-blooded and warm-blooded animals muscular activity is an important source of heat, and when a cold-blooded animal is engaged in rapid motion the temperature of its body tends to rise slightly above that of the surrounding medium and remains somewhat higher as long as activity is maintained. It then cools again, the rate of cooling being determined by the difference in temperatures and by the mass of the animal, according to purely physical laws. On the other hand, a cold-blooded animal having a moist surface, such as a frog, may when exposed to the air have a body temperature slightly lower than that of the surrounding air, due to evaporation from its surface. Variations in the temperature of cold-blooded animals from that of the surrounding medium are strictly in accord with physical laws and are not of vital significance.

The bee has been universally considered as belonging to the group of cold-blooded animals. All beekeepers will grant that there are many interesting peculiarities about bees, but often the things which we consider as peculiar to bees are shared by their near insect relatives. It is certainly a stretch of the idea of uniqueness of bees to put them in the class of animals with uniform body temperatures.

It may be well to examine some of the things that every beekeeper knows which invalidate the Brunnich theory. If a bee flies from the hive in early spring when the air temperature is between 45 degrees and 50 degrees F., as it may do if badly in need of a cleansing flight, the bee is safe only so long as it remains on the wing. It leaves the hive having the same temperature in its body as that of the part of the hive from which it came, and while remaining on the wing, heat is produced by the action of the great thoracic muscles, which is enough to counterbalance the loss of heat when the bee gets outside, and also enough doubtless to raise its body temperature a few degrees above that of the surrounding air. At the temperature resulting from this muscular activity, it is possible for the thoracic muscles to go on acting in a rhythmic way so that flight may be maintained, the lower limit of this rhythmic activity being close to 50 degrees F. If such a flying bee alights, even momentarily, the temperature of its body almost instantly falls to that of the surrounding air, and with equal suddenness flight becomes no longer possible. The extreme rapidity of this cooling is due to the small mass of an individual bee and to the relatively enormous surface for radiation which so small an animal has, so that this cooling is a purely physical phenomenon. Flight requires a higher temperature of the muscles than does the movement of the leg muscles, for the muscles of flight are of no value to the animal unless they are acting at a high rate of speed, while the legs are capable of moving the bee when acting slowly. We then sometimes see bees that have alighted which are capable of slow walking, but if they are far from the hive they are unable to return at such low temperatures. If a bee alights on snow, as is often seen in winter and spring flights, the temperature of its body quickly falls to that of the snow and these bees do not return to the hive, for at such a temperature even leg motion becomes impossible at once. If after such a chilling the temperature of

the air arises, it sometimes happens that such bees are able to return to the hive, either by slow walking or by more active flight. Almost every beekeeper has at some time picked up some of these fallen bees to warm them in his hand, and after such a warming they can often again take wing and fly back to the hive, bees not being injured appreciably by such sudden cooling.

Dr. Brunnich claimed to find in the results of Pirsch a confirmation of his views, since he claims that Pirsch brought his bees to an abnormal condition by keeping them quiet before taking their temperatures. He may also claim that chilled bees are abnormal, but if so, then we must believe that a bee is in an abnormal condition every time that it leaves the hive, and this would be absurd. There are still other things which have a bearing on the question, things which are less abnormal than the chilling of bees in the snow. Bees often remain outside the hive over night and may be seen returning to the hive before the bees of more regular habits have begun flight in the morning. Perhaps these are also abnormal cases, but they are rather common. What happens is that these bees became chilled on alighting on a flower or elsewhere and were unable to fly back to the hive the previous evening. When the early morning sun comes out, their body temperature is raised again to the point where flight is possible and they make a start home. Without the preliminary reception of heat from an outside source, such bees can never again fly, for they have within themselves no ability to raise the temperature to a point high enough to allow the wing muscles to begin functioning. In short, they have no control of body temperature which is a requisite of a warm-blooded animal. Whatever heat is produced by bees or by other cold-blooded animals is purely incidental to some physiological process, not a function under the control of a heat regulatory apparatus.

If worker bees have a body temperature of 102.2 degrees F., and drones a body temperature of 118.4 degrees F., one would scarcely expect to find a temperature as low as 57 degrees F. in the midst of a crowd of such warm bees in the fall of the year. With such body temperature and a temperature of 113.36 degrees F. for the brood itself, one would scarcely expect to find a regular hive temperature in the middle of the brood nest of only 93 degrees F., a condition which is maintained for weeks at a time in summer. The temperatures within the hive in winter and of the brood nest in summer have not been questioned by Brunnich, so we may assume that he accepts these as about correct.

It makes a big difference to beekeepers what the body temperature of the bee may be, and this is by no means a purely theoretical question. Our whole plan of wintering, by whatever method we use, is based on the assumption that the bee is cold blooded, for if Brunnich were right, insulation of the hive or bee cellar would be foolish. We have not so far found it so. So far, we have been concerned primarily in a study of the ways in which bees respond to different external temperatures, and on this knowledge we have based our methods of wintering, or rather on this knowledge we have based the explanations of our wintering methods, for the methods came before the explanations, as usual.

Quite aside from the responses of bees to different external temperatures, the temperatures of the hives themselves have a deep-seated effect on the bodily vitality of our bees in a way which has received almost no consideration whatever in our beekeeping literature. We commonly say that the life of a bee is determined chiefly by the amount of work which it is called upon to do, and in order to conserve their energy in winter we aim to insulate them so that the work of heat production may be reduced to a minimum. This plan has the advantage of working, and it stands the test of practice as well as theory. What we have not so far generally recognized is the well known fact that many activities of cold-blooded animals are correlated directly with the temperature to which the animals are exposed. If then the temperature of a colony of bees is raised for any reason whatever, certain physiological activities of the bees will consequently be increased in rate in direct relation to the temperature. Many observations have been made on various functions of cold-blooded animals, and it is known, for example, that rate of heart beat, rate of muscular movements, such as flight, walking, and the like, and rate of respiration and of respiratory movements are correlated with the temperature of the animal. An increase of 10 degrees Centigrade (18 degrees Fahrenheit) causes a doubling of many of these rates of movement, the increment rate varying with various classes of activity. If then, for any reason, the temperature of bees is increased by 18 degrees Fahrenheit higher than the optimum, we thereby practically double the rate of many of their essential activities. If then our common assumption that work reduces the length of life is correct, such an increase in temperature leads to a more rapid death of the bees. Experience and practical knowledge are in full accord with such a view, and there is nothing in the exprience of the practical beekeeper which throws any doubt on these assumptions.

It then does make a tremendous difference to the beekeeper what the body temperature of the bee is, and for this reason it has seemed worthwhile to point out the evident mistake of our good friend from Switzerland, for it does not seem right to leave this question in the state that it is at present. New York.

From Australia

One receives the impression on reading through your Journals that our difficulties here do not coincide altogether with yours. The impression as received is that the bulk of your crop is from clover. In Australia each state has its own peculiar flora, and the honey crop is a very mixed one; hence our salvation lies in blending a standard quality honey, which is the only means of increasing consumption.

Possibly you are interested in the marketing movements in Australia. At the present time, in each state the apiarists are concentrating supplies to a cooperative company, and by these means we are endeavoring to increase local consumption by propaganda and to cooperate with the other states in the event of a glut in any one.

Should you be interested at any time to secure the full details of the Australian marketing scheme, the writer will be only too happy to forward same to you.

We might mention that the articles in the American Bee Journal are greatly appreciated, and we often take the liberty of reproducing in our weekly Co-operator.

J. C. O'Neill,
For The Gippsland and Northern Co.-op. Co., Ltd.

If we give you the impression that the bulk of our crop is from clover, all over the U. S., then we are giving you the wrong impression. It is as with you, each state has a special crop, with the difference, however, that most of the central states have a white clover crop. As we are in the central states, and as most of our readers are in the clover belt, we naturally pay more attention to clover than to any other crop. Sweet clover (Melilotus) is the principal crop in the plains region.

However, the crop of the Pacific states is entirely different, being sage, orange, and a number of mountain flowers. The crop of Colorado and other mountain states is alfalfa; that of the southeastern states is from southern plants and trees, such as titi, saw palmetto, black gum, bay,

magnolia, etc. Such immense states as Texas have a very varied flora, mesquite, huajillo, and catclaw being some of the leading ones in the arid regions. The North varies also, having the wild raspberry and milkweed, which are not found in the central states. Buckwheat is special to the East.

So, you see, we might also try to blend our honeys. But if we did and everybody wanted blended honey, it would be out of the question for our local beekeepers to supply the consumers. There is bound to be a specialty in each region.

We will be glad to have you send us a detail of your marketing scheme, for our beekeepers must sooner or later cooperate if they expect to have ready sale for their increasing product.

We may be ahead of other countries in honey producing, but we are far in the rear in the matter of marketing.—Editor.

Cyprians a Condemned Race

By Paul Dervishian

IN apiculture as in all other agricultural industries, our aim is to discover better methods for cultivating, domesticating, and improving stock by breeding, but the most important is to find and select the variety that may give the best possible results with minimum of labor and expense. These points are rather unsettled in the beekeeping industry.

Of the present favored races of bees, every race has its advantages and disadvantages, its merits and its faults. But we must judge and select the one we can bring to perfection by the shortest route. Honey is the principal object of nearly all beekeepers. Cyprians produce it abundantly, as we all agree, and even one-third more than other favored races, so much improved by breeding. Cyprians produce more and better queens per colony; needless to speak of their wintering, disease-resisting capabilities, and other good qualities.

The only fault found with this race is their temper, but had they received only one-tenth of the partial attention given to other races, Cyprians would now hold the first rank, which they justly merit, much to the interest of all concerned in this delightful and interesting pursuit of ours.

Selective breeding gives wonderful results with all varieties of bees, animals, and even plants, but are the Cyprian bees immune to this improvement?

We have succeeded in it to a great extent and by exporting some queens to Europe have aroused the interest and attracted the attention of the most prominent scientific beekeepers. Many have commenced experimental work on this race, both in the pure state and their crosses, and some even have discovered that their intercrosses are as gentle and possessing nearly all the desirable qualities predominent in the pure, directly imported stock.

In my lifetime experience with these bees I came across two colonies, only, which I may call vicious, but not at all as vicious as some bee books exaggeratingly describe the temper of this race. These colonies I easily subdued with heavy smoke, requeened them and trapped the drones, to avoid bad consequences. This may happen with all races of bees accepted as gentle. But justice will be rendered to the Cyprian race by an impartial jury.

The photo is that of my home apiary, while I am manipulating a colony and distributing the frames of comb with bees to the daughters and servants of my tenant. You may note, dear reader, that the two ladies are wearing black clothes on account of mourning, which color is hated by bees and causes irritability.

Is this not sufficient proof that Cyprians are not at all as described and so notoriously known to be vicious and unmanageable? I may further add that this race is thoroughbred and not at all degenerated, because the primitive methods in use by the natives are harvesting the honey once a year after the honey-flow, in August, proportionately according to each colony's wealth. Another important item is that no bee disease is known in this island, and it is a well known fact that hereditary diseases in all living creatures, both animals and plants, bring degeneration. Nicosia, Cyprus.

Paul Dervishian and family with the "terrific" Cyprians

Honey Information Through Government Source

The Bee Culture Laboratory has referred, occasionally, to the fact that many government agencies give some attention to bees and honey. A recent incident is to the point.

In the September 23 issue of Foodstuffs 'Round the World, a publication of the Department of Commerce at Washington, was a note that Norway had made regulations governing the importation of foreign honey as regards quality and packing.

A telephone call from the Bee Culture Laboratory to the Norwegian Legation found the officials there most considerate and interested in knowing that the Department of Commerce had this information. They courteously agreed to furnish the full text of the regulations.

On October 26 this office received from the Norwegian Legation a translation of the Norwegian royal decree of June 16, 1927, whereby regulations governing the importation of foreign honey were issued. The substance of the regulations is as follows:

An article designated as honey, or by any combination of words wherein honey appears, may only be sold or imported if it consists exclusively of the product the bees collect from the flowers and store in the beehive.

Honey must be free from foreign substances as, coloring, preserving matter, sugar or water, and must be fresh and pure.

If it does not satisfy the preceding requirements it is to be considered a substitute which may not be sold under the designation honey nor any combination of words in which honey appears. The containers of such a substitute and the business papers concerning same must not have on them the word honey nor any pic-

tures of bees, beehives or wax combs, etc. For advertising purposes there must not be used any pictures or expressions which give rise to any confusion with honey.

The sale of honey cakes is an exception from this rule.

Imported honey must be accompanied by an invoice with the declaration that it is pure honey and that it is free from foreign substances. It must also be marked "Foreign Honey" in visible and distinct letters adapted to the size of the containers, even though its labels already indicate the place of production.

For the retail trade, the packages must be labeled "Genuine Honey" and the label must contain the producer's name or the name of the person who sells the product.

It will be noted that not only is it forbidden to sell a substitute as honey, but that neither the word "honey" nor anything that may connect the substitute with bees or honey is permitted to be used. Norway is evidently trying to protect the producers of honey in every possible detail.

What Is a Hive of Bees Worth?

Very often I am asked that question. Usually I ask, "What is a cow worth?" and make it plain that there is even a greater difference between bees and bees than between cows and cows. One cow is worth $40, another is cheap for $140, and another you have to pay somebody to take her away from your place, if she is sick. Just the same with bees; you could not give me a sick colony of bees, and I would not take $10 for my best colony. The price of any article depends on how badly you want it, or how badly you want to get rid of it. The actual value of a colony of bees depends on many things: condition of hive body, fairly new or ready to scrap, time of the year—spring or fall; condition of the bees, strong or weak; condition of combs, drone-combs, crooked combs, very old combs, or new worker-combs. Some colonies are worth $10, other colonies are not worth $2. Here, in California, it is against the law to either buy or sell or give away diseased colonies; likewise it is against the law to keep bees in boxes, gums, etc.

R. Diemer.

Granulating Honey

If your correspondent in the Dominican Republic (page 530) can purchase a quantity of well granulated honey from some country where honey granulates readily, and will soften this and thoroughly mix it with his own honey, stirring until the whole becomes slightly cloudy, and will then keep the honey in a fairly cool situation for a few weeks, I have little doubt that his honey will become solid, unless it is different altogether from any honey I have seen. I can say, however, that the West Indian honey imported into England granulates very well and some of it is sold in that condition. The honey mixture can be stirred a little each day with advantage, but if this overdone it may become too soft and fine, almost creamy in fact.

R. B. Manley, England.

Another New Bulletin

"Principles of Beekeeping for Beginners," by C. S. Rude, is the title of a new bulletin recently issued by the extension service of the Oklahoma Agricultural and Mechanical College at Stillwater. Rude will be remembered as formerly in charge of bee disease eradication work in the state of Texas.

The bulletin contains sixteen pages of matter of special interest to beginners with bees. It covers the life history of the insects, equipment necessary, and general instructions for their care.

Dakota Honey Grades High

The North Dakota News-Letter states that 90 per cent of the honey received for grading has graded water white, the highest grade in color provided by the new federal grading rules. Free grading service is offered to North Dakota bee men by the State College of Agriculture at Fargo.

Since nearly all the market honey produced in that state is from sweet clover, the quality rules high. This is a big advantage to the beekeepers of that region.

Milk and Honey Bread, Baked in Douglas, Ariz.

Here is part of a bread wrapper, sent to us by Mr. J. H. Sellers, of Bisbee, Arizona. The use of honey in bread making seems to be gaining in favor. While some bakers who have tried honey in bread have since stopped using it in favor of a cheaper invert sugar, many are continuing with it, and building up a good business in the sale of this bread, which is certainly more palatable than ordinary kinds.

In writing of this, Mr. Sellers says: "This is part of a wrapper from the 'Pure Food Milk and Honey Loaf' made by the Pure Food Bakery of Douglas, Arizona. The Bakery delivery truck is attractively painted with this label design, and it certainly makes good advertising for honey. They supply the larger towns and mining centers in this county.

"This milk and honey bread is having a wonderful sale, due to its flavor and good keeping qualities. The baker told me he was using about 150 pounds of honey per week in the manufacture of this bread. It is only a small concern. Think of what it would mean to the honey industry if all the bakeries throughout the country would put such a loaf on the market!"

THE EDITOR'S ANSWERS

When stamp is enclosed, the editor will answer questions by mail. Since we have far more questions than we can print in the space available, several months sometimes elapse before answers appear.

HOW LONG ARE BROOD COMBS GOOD?

How long can brood combs be used profitably? I believe it is a fact that after each hatch the workers clean out the cells and give them a coating of something resembling varnish. This repeated coating of the cells must reduce the size, and a time must come when the cells become too small. In melting old brood combs in boiling water, I notice these cell linings do not melt or dissolve in boiling water and are easily separated from the wax. I have also noticed that these linings bulk rather large. I am prompted to make this inquiry as I have noticed this season that in several of my hives most of the brood was raised in the half story with shallow frames, rather than in the full-depth frames in the standard brood chamber below. I started beekeeping in 1920 with one hive and have gradually built up my apiary to sixteen hives, so the oldest frames are seven years old, while the bulk of them are not over five years. Therefore I ask how long can brood combs be used profitably, and what is the best method of renewing them?

NEW HAMPSHIRE.

Answer.—Yes, bees build a cocoon, when in the cell, to change from larva to chrysalis, but this cocoon is so exceedingly thin that Langstroth wrote that "combs more than twenty years old have been found to raise bees apparently as large as any others in the apiary."

Bee writers are generally of the opinion that it takes quite a number of years of breeding to render the combs too narrow for the production of bees. The greater part of the residue which is obtained when rendering combs is produced by the cast skins of the larvæ, which are pushed to the bottom of the cells during their transformations. We have often preserved, as good, combs which were nearer twenty-five years of age than ten.

The experience which you had of bees breeding in the shallow super was probably caused by the greater warmth of the super, since heat always rises. When there is no crop, or a short crop, they are quite likely to breed in the super. But, as a rule, the queen will preferably lay eggs in a comb which is several years old rather than in a new one. I am quite sure that your combs are not too old to breed full sized bees.

Comb foundation in place of old combs is the remedy when needed.

WINTERING—RAISING QUEENS

1. I am wintering my bees in two-story, ten-frame hives, good, strong colonies, well packed. I am afraid the mice may get in my hives with ⅜-inch deep entrances. How would ¼-inch deep entrances do on making increase?

2. Is it practical for me to take out a queen of a very fine hive, let the bees raise queen-cells, ten days later cutting them out, then give one to, say, four or five frames of bees to start up new colonies? If this is possible how should I do this cutting out and introducing to the nuclei?

3. One of my hives of bees is very strong; they kept up well all summer. From a three-pound package they drew out about thirty-five Hoffman frames from foundation and gave me, as close as I can guess, sixty pounds of honey, up to the end of July. Is it possible that there is more than one queen, as there was two different colored bees in the hive; 35 or 40 per cent are nearly black, while the rest are very yellow? My hives are in straight rows, ten to a row, six inches apart. Even if they have drifted some, I cannot account for such a great number of dark colored bees in that hive with such a yellow queen.

NEW YORK.

Answers.—1. Entrances one-fourth inch deep will do, since bees can get through a passage one-fifth of an inch in depth. But you will find that they have difficulty in keeping the hive clean. So I would recommend a little more than one-fourth inch. Mice have to be very small to go through an entrance three-eighths inch deep only.

2. Yes, you can rear queen-cells, at the proper season, at the time when they still have drones for fertilizing the young queens. The best time to make increase in this way is during the white clover crop. On the ninth day after removing the queen, count the queen-cells, then make as many new colonies as you have queen-cells, save one for the colony itself. On the tenth day, you may introduce those queen-cells in each queenless colony. If you introduced them on the same day, they might destroy them. Have them well supplied with honey when you do all this.

3. I do not believe that this colony has two queens. The bright yellow queen evidently mated with a common drone and that is the reason you have workers of both colors.

TO KILL COLONIES IN FALL

What would you advise for killing colonies of bees in as humane way as possible and not taint the honey?

I have a number of blacks and some queenless, also some old queens, that I don't care to winter. We get more bees than we need to winter, they seem to build up so fast here, and, if wintered well with plenty of honey in the spring, are ready to swarm before the real honeyflow. So I buy queens and divide them early in June, and still they begin swarming again in July and August even though given plenty of room. I know a beekeeper that uses some drug (I believe) called High Life, to kill his bees. If not too much trouble and you can find time, please write me, as I want to get those bees out of the way soon.

NORTH DAKOTA.

Answer.—In Europe, where they still kill bees to take their honey, they always use brimstone. I don't believe that they suffer any more by that drug than by any other, and the fumes soon evaporate. It is as safe a method as I know of.

Personally, I would not kill any bees, except old queens that are no longer wanted. I would unite them with other colonies.

As to "High Life," I don't know what it is. To me, those words only mean "fashionable society and its mode of living."

To kill bees with brimstone, they dig a hole under the hive, put in a certain quantity of brimstone, remove the bottom board and light the brimstone. You can also kill the bees by simply smoking them with a smoker full of brimstone and closing the entrance for a few minutes.

SELLING EXTRACTED HONEY

I find it hard to sell extracted honey; comb honey sells better. I shall greatly appreciate any suggestions as to how to sell extracted honey. Mine is excellent in every respect. They tell me there is no undesirable flower about here from which bees make honey.

2. What do you think of top entrance hives? Would it be advisable for me to put two or three colonies in such hives this fall? I winter mine in the cellar.

3. How much per 50 or 100 do you charge for "Facts About Honey" booklet?

NEW YORK.

Answers.—1. There is only one way to sell extracted honey to people who don't know about it. It is to explain to them how it is taken out of the combs. We found the "Facts About Honey" very useful for this purpose. The people who have received the information and are not prejudiced soon learn to prefer it to honey in the combs.

2. I do not think there is any advantage in top entrance hives, especially when they are wintered in a cold country, as the bees often have great difficulty in cleaning out dead bees, unless there is also a bottom entrance. We used top entrances at one time, together with bottom entrances, and have discarded them.

We no longer sell the "Facts About Honey," because people considered this booklet as too expensive. So we are now making a cheaper leaflet, "Sweetheart of the Flowers," a copy of which I send you. The prices are marked on the front page.

FUMIGATING WITH HONEY IN HOUSE

Can you tell me if fumigating my honey house with calcium cyanide would hurt the honey. I have my crop of both extracted and comb honey stored in the building. I want to fumigate for waxmoth. I tried burning sulphur, but it did no good.

OHIO.

Answer.—Are you sure that is the drug you expect to use? The only drugs recommended usually to kill moths are sulphur and carbon bisulphide. If your trial of killing moths by sulphur did no good, it must be that you did not use enough, for the bulletin published by the Texas Experiment Station, of Dr. Paddock's experiments, testifies that one-fourth ounce of sulphur burned to the cubic foot of space, with an hour of exposure, killed all the worms of the moths. It is true that if you try to kill the mothworms and millers in a building 22 feet by 35, two floors, it will take a large amount of any kind of drug.

Why not place all the combs of honey and empty combs you wish to treat, within a small enclosure, say a room 10x12x7 feet. About ten pounds of sulphur would be more than ample to deaden every living thing in that space. You should be careful to burn your material in a fire-proof container.

If you wish to use carbon bisulphide, you should pour it into a small receptacle at the top of the supers to be sterilized, about three ounces for every ten cubic feet of space. Be careful not to bring a light within reach of it, as it is an explosive. We much prefer the burning of sulphur, as it is less dangerous.

POSITION OF COMBS IN BOX-HIVE

Would greatly appreciate the favor if you would answer the following question for me:

Is it true that in an old-time frameless box-hive, bees build their combs exactly north and south? WEST VIRGINIA.

Answer.—We were once told that swarms always went west. It looked correct, for the swarms from our apiaries always went in that direction, until we found out that they went to the nearest timber, which was west of our neighborhood at that time. There was a reason for it—they wanted to find hollow trees.

But as to bees building north and south, just try to imagine some of them going outside to look in what direction the sun is. And for what purpose? Would it make any difference concerning the success of the colony? I acknowledge that I never asked myself that question. Neither did I ever stop to look in what direction they built their combs; I know they follow any ridge that may be existing in the stump or box into which they go.

This is very much like planting potatoes by the moon. I was told once that it made a great difference for the crop. So I planted some potatoes when the ground was ready and I had the "moon" fellow tell me when the moon was right to plant the next lot, about two weeks later, and I could find no difference when the crop came.

If you think it worth while, you may try the matter of north and south on the hiving of bees. The rest of us will wait for results. Meanwhile, we will put guides in the frames.

NUMBER OF BEEKEEPERS IN U. S. AND HONEY PRODUCED

1. Could you please give me some idea of the number of beekeepers in the United States and the amount of honey produced?
2. What state produces the most, and how much? The second, third, fourth, fifth, and where does Ohio rank? OHIO.

Answers.—1. The census of the United States is very incomplete in regard to bees and honey, as the count was taken only of bees on farms, and many beekeepers who live in cities and villages were left out entirely. It is surmised that less than half the number of beekeepers and bees were listed. It is the same as to the amount of honey produced. The number of farms reporting bees in 1920 was 540,917, while in 1900 it was 707,216. The amount of honey reported in 1920 was 55,224,000 pounds, much less than half the number estimated by leading beekeepers.

2. California was reported as having produced 5,500,000 pounds of honey, the next state being Texas, with a production of a little over five million. Then came New York, Wisconsin, Colorado. Ohio comes sixth, with a yield of 835,894 pounds. Texas reports the largest number of colonies of bees. This is not astonishing, for very few apiaries in Texas are in incorporated cities

It is very important that we secure a better census in 1930, and our state associations should take the matter in hand and demand the attention of the Census Bureau, when it is organized for the next census.

KEEPING BEES IN CITY

I live in a closely settled village (the largest in the world) and my bees sting the neighbors. What to do?
OAK PARK, ILL.

Answer.—Try putting a wire netting, with half-inch mesh, twelve or fourteen feet high, around your apiary, or at least on the side or sides where they are the most annoying to the neighbors.

Bees do not like to fly through a half-inch mesh, and so they are likely to raise above it and then they will be too high up to annoy your neighbors. I saw it tried, and very successfully, at Peoria, in a thickly settled neighborhood.

I also advise you to always use smoke in handling your bees, and handle them only in the middle of the day, not in the morning or evening.

If you have colonies of bees that are more cross than the rest, buy some yellow Italians and supersede the queens. When you order your queens, ask for quiet bees. Let me know how you succeed.

SHIPPING BEES IN NOVEMBER

Please write and tell me if it is safe to send bees by express at this time of the year. Mine are in ten-frame hives. I have a man about 250 miles east of me who wants to buy some, but I don't know if it is safe to ship now while the weather is cold, or should I wait for warmer weather in spring. So please advise me.

Please also tell me about the Missouri bee law. MISSOURI.

Answers.—I have never shipped bees at this time of the year, so I can only give you an opinion not based upon actual practice.

I would prefer to wait till the first fair weather of spring, so that the bees could have a flight shortly after they arrive at destination.

For the State Bee Law of Missouri, write to Arthur Allen, State Apiarist, Liberty, Missouri. He will send you a copy of it.

DARKENED SYRUP FOR FEEDING

I enclose a formula for non-crystallizing syrup for feeding bees. I used in preparing this syrup a lard can instead of a kettle in making the inverted syrup. The acid (one ounce) turned the syrup very dark and it tastes brackish, or of the tin can. I did not mix the two syrups. I was suspicious it was poison and would kill the bees. Is it poisonous? Will it do to mix as directed and use it in feeding?
MISSISSIPPI.

Answer.—The formula in question is given by E. L. Sechrist, one of the officials of the Department of Entomology and a reliable man. It is certainly all right.

If your syrup turned dark, it must have been either that your tin can was rusty inside or that the tartaric acid was not of good quality. Sometimes a druggist will make a mistake and give sulphuric acid instead of tartaric acid. But I am inclined to believe that your can was worn down to the iron in some spots. In that case the dark color would not hurt the bees, but they might dislike the taste of the mixture. Try it in a small quantity on a colony.

BEES AND SALT

Question.—Have you ever noticed around a home or a store where ice cream is served that the salty freeze mixture was poured in the gutter often mixed with slopped-over ice cream melting? It is a common country town sight, but in all that time I have never seen a honeybee visit the salted sweets, or unsalted ice cream, for that matter. Don't bees like sweet ice cream, and would they get salt then, or salty water from the melting?

Answer.—No, we have never seen bees around melting ice cream, neither do we believe they would care for it. It is not sweet enough and it is too cold. But we have often seen bees gathering salt water where it was in permanence. We do not believe that it is indispensable to them any more than it is to cattle or horses, but it may be of some use in either case.

PAINTING HIVES

I am assembling some new hives and supers, and am painting the dovetailed ends before putting them together. Would like to ask if they should have two coats, or if one is sufficient? IOWA.

Answer.—When I did hive painting, I always put one coat on the joints before putting them together and two coats on the body of the hive. The parts that need painting the most are the lower edges of the body and the upper edges on the bottom board, where the two come together, because they are wet so much of the time. I have had hives last thirty-five years, in the weather all the time.

TO STERILIZE COMBS

1. What economical method may be used to sterilize combs?
2. Can salt water be used for this purpose? ILLINOIS.

Answers.—1. The only combs that need sterilizing are the ones that have been connected with foulbrood colonies, and the only positively safe sterilizing is done by the Hutzelman method.

2. I do not believe that salt water would be safe to sterilize combs against foulbrood. Other diseases do not need any sterilizing of the combs, as far as I know.

HONEY FROM ONIONS

Would it be possible for bees to gather enough nectar from the onion blossoms to flavor the honey materially?
NEBRASKA.

Answer.—Regarding this question, "American Honey Plants," by Pellett, has this statement:

"According to Richter, wild onions sometimes yield surplus honey in the vicinity of Sacramento, California. In some parts of that state, where cultivated onions are grown for seed, they are also important. The onion yields freely and the honey is said to be amber, with a characteristic onion flavor, which disappears after the honey is fully ripened."

Way Back Yonder

I think it is fitting for me to write you a few lines at this time, as it is just fifty-seven years since I started in the bee business, and it seems that the leading bee journal of America was ten years old at that time. I have been reading your valuable paper during this entire time, but some of the time it came to me in firm name or brothers' name.

I was going to enumerate some of the names of good men whom I have become acquainted with through your paper, Rev. L. L. Langstroth, Thomas G. Newman, James Heddon, G. M. Doolittle, Dr. Miller, Dr. E. F. Phillips, the worthy editors at the present time of the American Bee Journal, and last, but not least, the G. B. Lewis Company, all of whom have contributed very largely to the benefit of apiculture during the fifty-seven years of my career.

Hoping that this good work will go on to further success, I start on my fifty-eighth year.

R. A. Morgan, S. D.

(Yes, the American Bee Journal is 67 years old; but it suspended its publication, during the Civil War, for five and one-half years. I have been reading it a little longer than you have, since my father's first contribution was inserted in it in September, 1867, and we have thus been connected with it, more or less, for sixty years. You and I must be close together in age. I was 76 on the sixth of April, last.—Editor.)

Every ounce of this re-processed Water

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measures up to a given standard of strength and purity

For sterilizing combs infected with **AMERICAN FOULBROOD** ***it is the Cheapest Dependable Disinfectant.***

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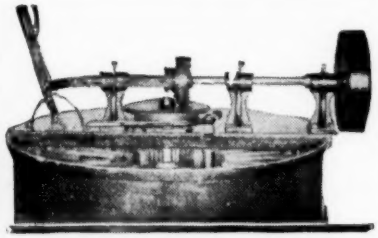

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The Colorado Honey Producers' Ass'n
Denver, Colo.

Quality of Heartsease Honey

It is never quite safe to make too definite a statement as to the quality of honey from any source. It varies too much under different soil and climatic conditions to justify one in saying exactly what honey from any plant will be like.

A few days ago I received a section of comb honey from F. W. Leubeck, of Knox, Indiana, with the request that I tell him what it came from. The honey was unlike any with which I am familiar. It was a beautiful section with white cappings and had a delicious flavor. There was a hint of a familiar taste, but I could not tell where I had met it before. In my reply I could only guess, and my guess was wide of the mark. Mr. Luebeck's letter follows:

"In the October issue of American Bee Journal you say that heartsease honey is dark amber and has a strong flavor. This is the reason I sent the section of heartsease honey to you. We have several kinds of heartsease here in Stark county. The plant the honey is from grows in large fields which have been under cultivation one year and idle the next. It also grows in corn fields, always in low places, and gets three to four feet high. It yields honey for about two weeks.

"It looks as though it was in full bloom about August 15. In an average season the bees will work it from about September 1 to September 15, although it blooms about two weeks longer.

"In my home yard I have nearly always Spanish needle mixed with the heartsease. Spanish needle honey is of a decided yellow color and the cappings of comb honey are yellow. Our amber or darker grades are gathered during August. Up to about the twenty-fifth we crowd our bees a little for room, then we put on another deep super, and if the season is a rainy one, two supers. I have never seen any dark honey in these last given supers, when the bees started to work on heartsease.

"In 1915 we had a frost on July 16. All the fall flowers were killed, no honey up to the first of September. Then heartsease came to be our salvation. The bees stored an average of one hundred pounds surplus, besides winter stores. A hive on scales in the home yard showed fourteen pounds gain in one day, and two days later nineteen pounds in one day. This was only a medium colony. In 1916 we had a repetition of the same weather conditions, with frost on June 23, and again we got only pure heartsease honey."

F. W. Leubeck.

In Cass county, Iowa, where I have had bees for many years, we get little besides heartsease in late summer. However, the honey has little resemblance to the sample sent by Mr. Leubeck. Our heartsease honey is dark in color and strong in flavor. It is probable that the soil explains the difference. Cass county, Iowa, soils are a rich black loam of glacial formation. In Leubeck's neighborhood, in Indiana, the soil is light and sandy in what was once a marshy region. Such variations occur to a greater or less extent with honey from any source. A well known example is the alfalfa, which in the high mountain valleys of Colorado is light in color and mild in flavor, while in the low valleys of southern California it is dark in color and strong in flavor. Much remains to be learned about the factors that control quality in honey. Many more observations should be reported along this line. We even find a variation in the quality of the honey from the same source in the same locality from year to year, probably due to different weather conditions.

Frank C. Pellett.

Cleaning Propolis from Sections

By Aaron Coppin

In regard to cleaning propolis from comb honey sections, we had better start on some of the old bee journals, twenty-five years or more back. At that time they had all kinds of emery wheels and sandpaper wheels for cleaning sections. We never had anything but a pocket-knife. We have lots of propolis here, and to cut down the labor of cleaning sections we are using the plain sections and a top bar on the section holders, so there is not much cleaning to do, only the edges. With a sharp knife we generally cut off a very thin shaving from the section.

Last summer we happened to have two supers full of the open two-side sections and no top bar to the section holders, and Mrs. Coppin was cleaning them, and she said: "Well, if the sections were all of this kind, I would quit producing comb honey." We have also reduced the labor by using the split section.

Bees Start Kresge Fortune

The Newark Sunday Call recently published a feature story of the career of S. S. Kresge, proprietor of the famous line of ten cent stores. According to the story, a little apiary started when he was a boy furnished the first capital which he used in starting into business for himself. He now has more than four hundred stores in his chain. It is interesting to note that the little apiary is still maintained on the Pennsylvania farm, where his mother resides.

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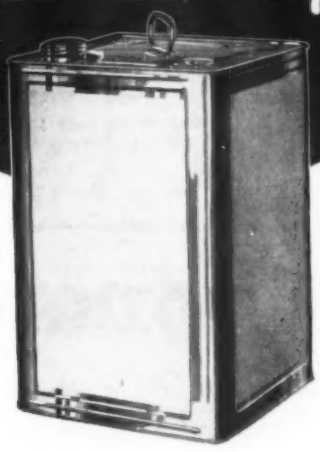
5-Gallon Square Cans for Honey



WHEELING'S 60# 5-gallon Square Can is a top-notch honey container! Top and bottom are *double seamed and soldered,* making a leak-proof container of exceptional strength. Furnished with 1¾", 2" and 2¾" screw cap with cork or paraffined pulp-board liners in either 107# or 135# tinplate.

We are also in position to furnish all sizes of friction top honey and syrup cans. Let us quote prices on your requirements.

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Bees and Honey

George W. York, *Editor*

Even if you haven't seen a copy of "Bees and Honey," you'll make no mistake in ordering it with the other two great bee papers. But if free sample is wanted, write for it. You'll be surprised to find it so valuable.

"Bees and Honey" is THE bee paper of the Great West—where beekeeping is developing faster than elsewhere, because there is more good unoccupied honey-producing territory in that region.

All NEW subscribers to "Bees and Honey" for 1928 who send us their orders before January 1 will receive two extra copies free. Send all orders only to—

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A strain of Three-band Italians with a record for honey production in every section of the U. S. and Canada.

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Mention the American Bee Journal When Writing Advertisers

How Many Bees Make a Colony?

Someone entirely ignorant of beekeeping occasionally asks about the purchase of "a pair of bees" to make a start. To one who knows, such an enquiry seems like a huge joke, although the questioner is serious enough.

In the November American Bee Journal, W. D. Albright tells of the experience of a settler who ordered a two-frame nucleus, thinking he would get a hive with one super. Such experiences raise the question as to just how many bees are necessary in order to establish a colony of bees under favorable conditions.

In the September 15 Victorian Bee Journal, mention is made of the fact that Alf Dyer took bees to North Australia, but that only about two hundred worker bees survived the journey. In this case he was able to increase to three colonies in eighteen months.

Since it is necessary to maintain a high temperature in the hive for brood rearing, a good sized cluster is necessary in cool weather. During the warm days of mid-summer it is possible for a very small cluster to build up, because little heat must be generated by the bees.

In the article quoted, mention is made of a colony which was reduced to about 150 worker bees, yet they had five cells of brood, two of them sealed. The bees will do their best to restore the colony, no matter how great the disaster that has overtaken them.

I have been able to build up some extremely small clusters into prosperous colonies by setting them above a strong colony, where they received the benefit of the heat from below. In this manner one can save colonies that could not possibly survive alone. F. C. P.

Utah Crop Short

According to those who are in a position to pass judgment, the estimate on the honey production of the Uintah Basin for the season of 1927 is about 60 per cent of a normal crop.

The reason given for the shortage is the continuous damp weather during the months of August and September.

The largest honey producers in this part of the basin are Zecker & Sons, Belliston Brothers, W. Stewart, Mower Brothers, N. L. Peterson, and W. H. Paul. Most of the growers, for the purpose of marketing their crop to the best advantage, are members of the Mountain States Honey Producers' Association, with headquarters at Boise, Idaho.

Glen Perrins.

Meetings and Events

North Dakota Offers Instruction By Mail

The North Dakota State College at Fargo has been offering during the past two years a number of practical farm courses by mail. This service has proven so popular and successful that the college has started out on its third year of this work with new subjects as well as the original courses, which have been revised and enlarged.

These courses are free except for the cost of the postage and paper used. Each course is divided into twelve assignments, including explanations and questions. Free state and federal bulletins are used for textbooks. Students are required to answer questions in writing. Upon completion of a course, a certificate of completion is awarded.

Last year hundreds of people made use of these courses, and the school is prepared to handle a very large increase in the enrollment this year. However, prospective students are urged to enroll immediately in order to have the best part of the winter to devote to their studies. The following courses will be available for study this year: Poultry, beekeeping, fruits, vegetables and trees, forage crops, dairying, sheep husbandry, swine husbandry, beef cattle, small grains, farm structures, farm management, marketing, price trend, financial investments, survey of scientific agriculture (especially adapted to real estate men, bankers, large landholders, etc.).

Further information regarding this service may be obtained by writing to the Department of Correspondence Courses, State College Station, Fargo, North Dakota.

Aberdeen, South Dakota, Doings

The Aberdeen, South Dakota, District Beekeepers' Association recently selected a design and slogan for its trade mark from a list of seventy-one entries.

Claud A. Barr, of Prairie Gem Ranch, Smithwick, won first with his suggested design, and Ellen Svarstad of Stratford, Dr. R. Mason of Aberdeen, and Mrs. M. F. Landgrebe from Elgin, N. D., took second, third and fourth prizes with their slogans.

A honeybee hovering over a few cells of honey, and sprigs of sweet clover, was the winning trademark, cleverly depicted in colors by Mr. Barr, which will be incorporated by the organization with the words, "Bit-O-Sweet" over the design and "Dakota White" underneath the work; these were the prize winning third and second place suggestions submitted. The new trade mark will also have "Aberdeen District Beekeepers' Association" worked in effectively, with a blank space in which can be inserted the class of honey.

After the judging, a short business session was held, at which time a committee of A. J. Svarstad, Mrs. Glau, Dr. Brinkle and County Agent W. E. Dittmer was appointed to set a time and place and make other arrangements for an annual banquet of the members and people interested in this subject.

Plans for the feast will be featured by food products made out of honey, of which there has been a great many just lately made known. This association has been in existence for more than two years and is headed by Grover Lathrop, of Aberdeen.

Jager Resigns

Announcement has recently been made of the resignation of Professor Francis Jager as head of the Division of Bee Culture of the University of Minnesota, to take effect October 1, 1928, when he completes fifteen years of service.

Minnesota was the first state to establish a Division of Bee Culture in its university. Professor Jager is widely known among American beekeepers. He is a popular speaker at conventions, a careful judge at honey shows, and an efficient honey producer and queen breeder. At the expiration of the present school year it is assumed he will retire to his country home at St. Bonifacious, Minnesota, to give personal attention to his extensive apiaries.

North Dakota Short Course and Annual Meeting

The annual short course in beekeeping and state association meeting will be held at the College of Agriculture at Fargo, January 16 to 20. The short course will extend over the greater part of the week, with two days given over to the convention on Thursday and Friday, January 19 and 20. Some prominent speakers from outside the state are expected. Reduced fares will be available during the week on account of the annual Tri-State Congress. A horticultural short course will be held at the same time.

Lively Meeting Coming for Annual December Convention of Illinois State Beekeepers' Association

A big crop year, a bunch of live county associations, a good sized state association — surely a background for one of the best state

10,000 QUEENS
FOR 1928 DELIVERY
Guaranteed to be the equal of any queens now on the market
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Root Quality Queens
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Running's Bees and Queens
ITALIANS THAT ARE HONEY-GETTERS
We are now booking orders for 1928 delivery. Shipping begins April 1. We have been producing package bees in the South for eight years and have one of the best package and queen-rearing establishments in the South, and have been producing large crops of honey in Michigan for 28 years.
WE HAVE THE STOCK AND KNOW THE BUSINESS
Try one or a hundred and you will want more. They get the honey. We want to show you. Bees and Queens shipped from Epes and Sumterville, Ala. Our prices are right, stock unexcelled and service guaranteed. Write for prices, stating how many you can use.
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Bee Supplies

Get our prices before placing your orders

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IT WILL BE

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Next month—none too early now to write us what you need

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Untested queens.....$1.00 each
Tested queens.....$1.50 each
Bees.....$1.50 per lb.
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Bees inspected; free from disease

J. W. SHERMAN, VALDOSTA, GA.

beekeepers' conventions ever held anywhere. That's just what we expect to make the 1927 December convention in Illinois — one of the best ever.

Get busy right now. Save the money; buy Mother the clothes; trim up Lizzie (the tin one); set the alarm clock. The dates are December 6 and 7, at the St. Nicholas Hotel, in Springfield, Tuesday and Wednesday. Also a big meeting Tuesday evening.

We have brought together the speakers you have been waiting for years to hear: George S. Demuth, editor "Gleanings in Bee Culture"; Frank C. Pellett, associate editor "American Bee Journal"; E. L. Sechrist, of the Bee Culture office, Washington, D. C.; Mrs. Cornforth, of the Home Economics Department, Kellogg Cereal Company; Francis Jager, St. Bonifacius, Minnesota; C. D. Adams, Wisconsin Department of Markets; Russell H. Kelty, East Lansing, Michigan; F. B. Paddock, Ames, Iowa; Herbert J. Link, La Porte, Indiana; V. G. Milum, University of Illinois; Senator Boyd; Director of Agriculture Stannard.

Can you beat that bunch? Every one of them so well known that there is no use introducing them. Way-up-yonder top-notchers.

Get busy, county secretaries, get busy all you fellows. WE WANT A CROWD.

Secretary Illinois State
Beekeepers' Association.

Manitoba Short Course

The sixth annual two weeks' short course in beekeeping will be held at Manitoba Agricultural College, Winnipeg, January 23 to February 3, 1928. Most of the lectures and demonstrations will be given by A. V. Mitchener and L. T. Floyd, Provincial Apiarist. Lectures on subjects related to beekeeping will be given by such departments as woodworking, chemistry, horticulture, botany, bacteriology, and home economics. Two hundred and ten students have attended during the last five years. It is expected that this winter's class will be well filled, especially by reason of the heavy yields of honey which have been obtained from Manitoba during 1927.

Dr. Howard Resigns

After more than thirty-three years as chief of the Bureau of Entomology in the U. S. Department of Agriculture, Dr. L. O. Howard has resigned to devote his full time to research work in entomology. Dr. Howard has been connected with the government work for nearly fifty years.

Dr. C. L. Marlatt, who succeeds him as chief of the bureau, has been assistant chief for many years and has been closely associated with Howard in the work.

Although Dr. Howard is past 70 years of age, he anticipates doing much good work in his chosen field. Naturally, he wishes to be relieved of the responsibilities of an executive position.

Empire State Meeting

The annual meeting of the Empire State Federation of Beekeepers' Cooperative Associations, Inc., will be held in the court house at Syracuse, New York, on December 6, 7 and 8, 1927.

A very interesting program is being arranged and much important business is slated to be done; also a get-together banquet on the evening of the seventh. All beekeepers and their friends are cordially welcome.

F. M. Babcock, Sec'y,
Fredonia, N. Y.

Manitoba Convention

The annual convention of the Manitoba Beekeepers' Association will be held at Winnipeg on January 31 and February 1, next. Speakers promised are W. A. Chrysler, Chatham, Ontario; R. M. Pugh, Apiary Inspector, Saskatchewan, and C. B. Gooderham, of Ottawa.

Poisoned Bran Mash

By Dr. J. H. Merrill

POISONED bran mash, like dynamite, is a valuable servant to mankind only when the destruction which it causes is controlled. If we wish to blow out a stump with dynamite it is not usually desirable to shatter the windows in adjacent houses as well. Nor need we do so. Similarly, when using poisoned bran mash to control pestiferous insects it is not desirable to kill bees, nor is there any need of doing so.

Poisoned bran mash is made both sweetened and unsweetened, and the addition of fruit juices is said to increase the attractiveness of this bait.

The time for spreading bran mash depends upon the habits of the insects which it is desired to control. For instance, grasshoppers feed in the day time, hence the mash is spread in the morning. It might be observed here that this time coincides with the feeding time of bees. Cutworms do their destructive work at night, hence the mash is spread in the evening to control them. In dry localities, this might be very nearly dried out by daylight, but there are sections of the country

where, owing to the heavy dews, the mash would be even more moist in the morning than when spread at night.

Some experiments were conducted at the Kansas State Agricultural College to determine the possibility of causing injury to the bees by using poison bran mash. It was found that if poison bran mash is used as an insect control at a time when such honey plants as alfalfa and sweet clover are in bloom the bees will not forsake the plants upon which they have been working, readily, for the mash. Furthermore, since the mash is spread thinly it will dry up before the bees discover it as a possible source of honey, inasmuch as the greater part of the working force will be occupied with the prevailing nectar flow.

During a dearth of nectar, or when the majority of the honey plants have been killed for any reason, the bees will readily feed on the sweetened bran mash.

The sweetened bran mash was spread on papers which were placed in the midst of a mass of white clover blossoms. The bees which visited these blossoms passed directly over the papers on which the mash was spread, but they did not molest it. Other papers were spread with sweetened mash and placed at some distance from the hives, in spots which were destitute of flowers. The bees not only discovered these sets but grovelled in the bran mash.

In order to determine the toxic effect of the mash, three glass exhibition cases were used. Sweetened poison bran mash was strewn on the floor of one, unsweetened bran mash was spread on the floor of the second, while none was placed in the third case, it being used as a check. A number of bees from the same hive were shaken into each case and the cases were then set aside until the following day.

An examination of the cases the following morning revealed the fact that there was not a single living bee in the case containing the sweetened bran mash, while there were but few scattering dead bees in the unsweetened case, no more than in the check case.

From the above experiment it seems safe to conclude that bees will not be attracted to bran mash provided that there are nectar plants in bloom at the time when it is spread, but that they not only will be attracted to it, but will be killed by it as well if it is used during a dearth. However, if the unsweetened bran mash will attract cutworms, grasshoppers, and so forth, then it may safely be used at such a time, and in fact it is advisable to do so.

Winners in our 1927 Comb Honey Contest

Fred Marquette, Fargo, N. Dak., first prize, $60.00; R. A. Morgan, Vermillion, S. Dak., second prize, $25.00; J. W. Stine, Burlington, Iowa, third prize, $15.00. Mr. Marquette produced 551.2 pounds of comb honey in 4¼x4¼x1⅞ comb honey sections, officially attested.

Write for booklet describing our Caucasian bees and $100 in prizes to be given away in 1928.

BOLLING BEE CO., BOLLING, ALABAMA

Pacific Citrus Honey Company

General Office 564 Market Street, San Francisco, Calif.,

will again offer QUEENS AND PACKAGE BEES for shipment during SEASON 1928, from 2,000 colonies of the finest Italian three-banded bees and proven light breeders.

Queens, $1.00; over ten, 85c
Packages, $2.00; with queens, $3.00
Packages, over ten, $1.80; with queens, $2.65
F. O. B. Woodlake, California
10% with order
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Package Bees for 1928

3-Band Italian Bees and Queens

Our bees are real Producers
We ship promptly. No delays
Absolutely no disease in our locality

DELIVERY GUARANTEED

Be sure to send for our free circular and other valuable information

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For thirty years we have specialized in the manufacture of **Sections** from the whitest selected Wisconsin basswood

We also manufacture hives, supers, frames and shipping cases

Write for our free illustrated catalog

Marshfield Manufacturing Company
Marshfield, Wisconsin

Achord Bees and Queens for 1928

December, and long winter evenings in which to plan for the new year. Reliable package bees are profitable, and if you have never used them we believe it worth your while to consider them now.

For us the new year of package work has already begun. We will be ready to ship your order promptly when spring comes. New queen-rearing equipment needed for our usual annual increase in production is now being made up. New combless cages, of the latest, most approved type, are being built.

Write us your needs for the new year and let us name you prices. Our stock and service will please you.

W. D. ACHORD

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A real display honey case—one that will help sell your honey.

Pails and square cans

Write for prices that can't be beat.

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Our colonies are wintering in excellent condition and our shipping season, April 1, will find them boiling over.
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RED STICK APIARIES
Baton Rouge, La.

Big Marketing Conference Following League Convention

The League will sponsor a honey marketing conference for all those interested, immediately following the convention. The day scheduled for this conference is January 28, but if additional time can be used to advantage, the meeting will be prolonged. The League will not be in charge of this affair, but will assist with it and encourage attendance by marketing experts and those interested in marketing problems. Mr. A. W. B. Kjosness, general manager of the Mountain States Honey Producers' Association, of Boise, Idaho, has been placed in direct charge of this conference.

This conference, of course, will be of primary importance to the western states, as doubtless many of the eastern states cannot afford to be well represented. It was suggested with the idea that the national meeting held in the West would make it possible to get representative groups from all of the important honey producing states of the West together on a much needed program of marketing. Naturally the meeting will be open to everyone from everywhere, and it is hoped that the entire national delegation to the convention will remain over for the additional day's program.

Broadly speaking, there seems to be two outstanding needs in the development of the marketing program of the western states at the present time. These are: First, the coordination of the work of the present marketing agencies, and, second, the extension of organization in marketing into unorganized territory. It is presumed that the conference will work largely upon these two phases of the marketing problem.

Already it seems likely that practically every honey marketing organization of the western states will be represented. We also have the assurance that the Ontario Honey Producers' Association will be represented by the Messrs. Halstead and Weir, manager and secretary-treasurer, respectively, of that association. To secure the ideas and help of these successful marketing men, alone, should justify the expense of attendance by all interested in the marketing of honey.

C. L. Corkins.

Heat Generation by Bees

By Frederick B. Simpson

While not familiar with the merits of Dr. Phillips' discussion as to hive insulation in the November number, the writer calls attention to his words, "Such an assumption can be made only if it is first assumed that bees at all times generate heat," "and in short, that they maintain a body temperature higher than that of the air surrounding them." "There is not a single authentic fact about bees which allows such an assumption."

The present writer has divided the first statement into two members, as he believes the first to be true, but does not consider the second member of it a necessary consequence or summary of the first.

What higher authority could we have than the good doctor's own statement, . . . "the bees raised the cluster temperature, and in zero weather their cluster temperature was doubtless at least 93 F.," when we compare it with the statement of Dr. William H. Howell in his "Textbook of Physiology." "The increased production of heat in the body in consequence of a fall in external temperature is a characteristic property of warm-blooded animals."

To connect bees with this general statement it is only necessary to point out that heat production is a necessary consequence of the metabolism requisite to the maintenance of life, depending as it does upon chemical change and muscular activity.

In any investigations concerning bee heat we are constantly faced with quantities and measurements so minute that their practical determination is almost invariably rendered worthless by reason of the faults or limitations of the technique, and in this respect the writer is fully in accord with Dr. Phillips' strictures as to a "single authentic fact" supported by experimental proof.

The future may, however, afford refinements in technique which will furnish authentic conclusions.

Cuban Beeswax Exports

Beeswax has been formerly an important export item in the Santiago section of Cuba, but with honey bringing higher prices and an increased demand, producers have neglected beeswax. Formerly hives were crudely constructed from hollow logs, old boxes—in fact any makeshift enclosure that would house a hive of bees. These primitive hives were frequently emptied during the honey season, which in this part of the island is from October to April. With this method only superior grades of wax were obtained. With the advent of modern hives with their ready prepared frames the supply of prime beeswax has declined.

The quantity of beeswax placed on the market this summer was considerably less than in former years. Dealers attributed this in part to the

short sugar grinding season, when beekeepers gave all their time to the cane harvest. Exports of beeswax for the first six months of 1927 amounted to 83,932 pounds from Santiago.

Nuevitas is another Cuban port from which beeswax is exported, but not to the same extent as Santiago. The value of beeswax exported from Nuevitas for six months during 1927 amounted to 27,777 pounds, value $10,874.

Cuba ranked third as a supplier of beeswax to the United States in 1925, and fourth in 1926, supplying about 10 per cent of our total imports for 1925 and 8 per cent for 1926. Thus, while supplying 26,064 pounds more in 1926 then in 1925, the percentage was 2 per cent less. This was occasioned by the fact that our total imports of beeswax from all countries amounted to 3,556,794 pounds in 1925 and 4,622,448 pounds in 1926.

Prior to the World War, Cuba and Germany supplied the bulk of imports into the United States, but now large amounts are also imported from Brazil, Portugal, United Kingdom, Dominican Republic, and Belgium. The exportations of beeswax from Cuba to the United States during the past two years were as follows: 1925, 370,085 pounds, value $133,613, average price per pound 36 cents; in 1926, 396,148 pounds, value $156,439, average price per pound 39 cents.

Old Subscribers

We have been sending an invitation to some of our former subscribers to join us again. Here is what one of them replies while sending his remittance:

I am back to stay
And wash the cups and saucers up
And brush the crumbs away,
And listen to the bee tales
The old man tells about.

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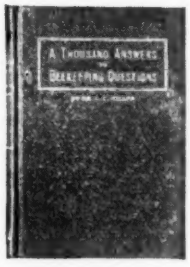

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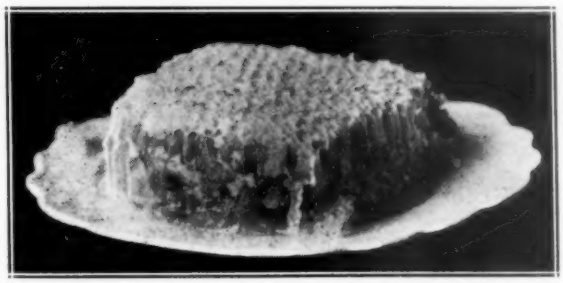

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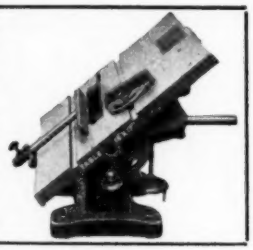

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At last a peanut butter with the pleasing flavor of peanuts, but without that dry taste that makes other peanut butter stick to the mouth like paste. It really melts in your mouth like butter.

What makes this great change in peanut butter? It is the honey in it that gives it that smooth eating quality. It is the honey in it that makes it so delicious—so healthful.

Answer the following questions and send us 20c and we will send you postpaid a sample 10-ounce tub of this Nut Butter. Besides, Mr. Krafft, the manager of the honey bottling plant, will write you a personal letter, telling about his opinion of the future honey market.

How many colonies of bees do you operate? How do you sell your honey? If to the grocers, about how many stores do you supply?

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Crop and Market Report

Compiled by M. G. Dadant

For our December crop and market page we asked reporters to answer the following questions:

1. How did the final crop compare to 1926?
2. How much of this year's crop is sold?
3. What was the jobbing selling figure
   (a) of white extracted
   (b) amber
   (c) comb
4. Is the crop selling readily?
5. Will it all move?

FINAL CROP

There has been very little change in conditions since the final crop was reported in our October issue. In fact, the summaries as made independently for October and November issues are indeed very similar. Some sections of the intermountain territory possibly have a little less than earlier reported. Colorado has not had a normal crop and Montana probably about one-third crop. The situation has altered somewhat in Florida from the fact that they have had an unusually good later flow, and the crop as a whole has been considerably better than last year.

The Province of Manitoba is reporting a much heavier crop than earlier, in fact much more than last year, ranging as high as 150 per cent of 1926. In Ontario the crop has probably been 30 per cent heavier than last year.

The heavy producing states remain as previously, the central western states, comprising the states of Ohio, Indiana, Illinois, Missouri, Iowa, Michigan, Wisconsin. Other good producing states which run probably 150 per cent or more are North Dakota, New Jersey, Pennsylvania, and New Mexico and Arizona.

CROP SOLD

It is pleasing to note the large amount of the crop which has already been sold by November 10, when reports were returned to this office. California, especially, has disposed of probably 90 per cent of her crop, and Arizona, which gets most of her market also through California, has probably sold 75 per cent. North Dakota and other heavier producers report 75 per cent of the crop already marketed.

The bulk of the states report about 50 per cent of their crop already disposed of, and the remainder all the way from 20 to 50 per cent. All in all, honey is indeed moving very nicely, especially in view of the fact that the selling season started with apparently a slightly glutted condition, owing to the carryover of last year's crop, some of which had been sold at an extreme sacrifice in the late spring months.

PRICES

There is a slight tendency for prices to weaken, but we believe that most of this tendency is due to the fact that a few of the less ethical buyers are trying a policy of "beating down prices"—that is, endeavoring to show the producers that there is an abnormal crop and that prices are going to slump so they may buy at reduced figures, and sell later to advantage.

However, this has been offset by the heavy demand from foreign countries and the fact that the intermountain territory is now well organized and also is confident that there is to be a stiffening of demand a little later on, rather than a slump as we had in the 1926 selling season.

One of the big marketing organizations of New York reports that sales are much heavier than a year ago, and although prices in general show a tendency to decline, honey on the contrary is at a very advantageous position and shows rather a possibility of advance.

White honey has sold as low as 6¾ cents in some instances, but this has been, we believe, on the part of parties uninformed of the market. There has been a considerable amount of honey in car lots, good white honey, sold at 7 cents, but the bulk has moved at 7½ and a number of cars at 8 and 8½ cents. We believe the price is stabilizing around 7½ to 8¼ cents per pound.

The southeastern states, except Florida, are practically clear of honey and should be able to handle a conciderable amount of the amber honey overproduction of other localities if it should be properly distributed down there.

In the Central West there seems to be a glutting of the market on comb honey, the demand not being as much as the production. If the markets were available, however, we believe this comb honey could be moved at a desirable rate, because comb honey in general is in good demand and in short supply. Prices on comb are varying extremely, being quoted equally in intermountain territory and central western and eastern points at from $3.50 to $4.50 per case, whereas the eastern quotations should undoubtedly be very much higher.

HONEY SALES

With very few exceptions, honey is selling well. In fact, the writer was very much surprised to find the optimistic attitude of the beekeepers, even in the sections which were really overproducing this year, like Central West and some other communities.

WILL ALL HONEY MOVE?

There was a unanimity of opinion that honey would be disposed of without much difficulty this year, and I believe that it is entirely justified. In fact, the honey situation is far improved even over last year, even though some sections, probably small producers, are having a cut-price war. We see no reason for such prices, except that some of the smaller producers are becoming panic stricken. The heavy producing areas this year are not offering at very low-cut prices and the central western people should not, therefore, have very low competition.

One thing that really makes for a desirable situation on the part of honey is the extremely short crop of fruit there is, practically all over the United States. Fruits are scarce, and have been scarce; the amount of canning done by housewives is comparatively small this year, and this being the case, there should be a heavy demand for sweets of other kinds. Of course, this is partly filled by syrups, but honey should get its share of such a demand.

We must realize that the season has been adverse to honey selling up to about November 1. The weather has probably been warmer than for many years. With the coming of cold weather, however, there should be a rapid quickening of demand for honey, and this should be reflected all the way down the line as the winter progresses.

We do not mean to urge producers or honey sellers to try to stiffen prices on honey. But we do believe that there is a market for all the honey that has been produced this year, and that a little extra effort in selling will find a market. The consumers need some sort of sweet, and honey may be made to supply it if the effort is forthcoming on the part of honey sellers.

CLASSIFIED DEPARTMENT

Advertisements in this department will be inserted for 5 cents per word, with no discounts. No classified advertisements accepted for less than 35 cents. Count each initial or number as one word.

Copy for this department must reach us not later than the 15th of each month preceding date of issue. If intended for classified department it should be so stated when advertisement is sent.

As a measure of protection to our readers, we require references of all new advertisers. To save time, please send the name of your bank and other references with your copy.

Advertisements of used beekeeping equipment or of bees on combs must be accompanied by a guarantee that the material is free from disease or be accompanied either by a certificate of inspection from an authorized inspector or agreement made to furnish such certificate at the time of sale.

BEES AND QUEENS

MY CUSTOMERS — REMEMBRANCE—APpreciation. Merry Christmas. Happy, prosperous 1928. Finest Italian queens.
Wm. R. Stephens, Wingate, Ind.

PACKAGE bees and queens. If you want bees and queens, place your order early. We are now booking orders for 1928. Get our prices before buying. We guarantee safe delivery and satisfaction. Health certificate and all necessary papers with each shipment. The Mangham Apiaries Company, C. S. Duncan, Prop., Mangham, Louisiana.

EARLY package bees and select young laying Italian queens. The kind that will pay you a profit the first season. Attractive prices on orders placed in advance. Our northern location will save you both time and express charges. Let us quote you on any size order, either f. o. b. here or delivered to your station. We guarantee safe arrival and delivery on time. Circular free.
J. E. Wing, Cottonwood, California.

SPECIAL discount on early orders for package bees for 1928. A postal card will bring new price list.
N. L. Stapleton, Colquitt, Georgia.

JES DALTON is at New Orleans scraping together another bee outfit, and wants to hear from his old customers who paid cash for bees last spring and failed to get them due to flood conditions. We are in position to settle all claims with cash and will have some better bred stuff than ever for delivery in spring of '28.
Jes Dalton, Route 2, Box 380,
Orleans Parkway, New Orleans, La.

BARGAINS on package and nuclei bees from one package to several thousand. Very cheap prices. Write us your wants before placing your order elsewhere. We believe we can save you money. First-class references from customers all over the United States, Canada, and even Cuba. We would like to hear from several large beekeepers. Have a good offer.
The Louisiana Modern Apiaries,
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FOR SALE—100 colonies of bees, together with equipment for 200 more. Unexcelled location for 1,000 colonies. Standard ten-frame. Sell all or part.
B. F. Kindig, East Lansing, Mich.

WANTED—To book orders for from 300 to 500 packages pure Italian bees and queens for April and May delivery.
O. P. Hendrix, West Point, Miss.

FOR PROMPT SERVICE—Full weight, safe delivery and satisfaction at reasonable prices, book your order for Italian bees and queens with P. M. Williams, Mt. Willing, Ala.

THRIFTY CAUCASIANS—Booking orders for three-frame nuclei, also queens for May delivery. Yard inspected regularly for protection of diseases.
Peter Schaffhauser, Havelock, N. C.

AMERICAN BEAUTY Italian bees and queens. Tupelo Apiaries, J. L. Morgan, Prop., Apalachicola, Fla.

BEFORE placing your 1928 order for bees and queens, get our booklet giving prices, also explaining **why** bees ship better and give better **results** from this location than from many other locations.
The Citronelle Apiaries, Citronelle, Ala.

PACKAGE BEES—For 1928. Write for prices. Special price to first fifty who order five or more packages.
J. J. Scott, Crowville, La.

CAUCASIAN QUEENS from imported stock. Select untested $1.50 each for balance of season. Now booking orders for 1928 delivery. Tillery Bros.,
Greenville Ala., Rt. 6.

TESTED good quality three-band queens $1.00 each during fall and winter months. I sell queens every month of the year.
D. W. Howell, Shellman, Ga.

"SHE-SUITS-ME" QUEENS—Three-banded stock. None better. Untested queens from May 15 to June 15, $2.00; after June 15, $1.50. Introduction guaranteed.
Allen Latham, Norwichtown, Conn.

HIGHEST grade Italian queens—Tested, $1.50; untested, 75 cents. Package bees, one pound, $1.50; two pounds, $2.50; three pounds, $3.25. Have had no disease. State inspection certificate with each shipment. Safe delivery guaranteed.
T. L. Davis, Buffalo, Leon Co., Texas.

TRY our high class queens and get the honey. We sell only the best selected Italians, guarantee safe arrival and complete satisfaction in every way. Our queens are personally reared and we want you to try them. Prices are $1.00 each; 6 for $5.50; 25 at 80c each, and 50 or more 75c each.
Salida Apiaries,
T. L. Nicolayson, Prop.
Salida, Calif.

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Jasper Knight, Hayneville, Ala.

GOLDEN THREE-BANDED and Carniolan queens. Tested, $1.00; untested, 75c each. Bees in 1-pound package, $1.50; 2 pounds, $2.50; 3 pounds, $3.25. Safe delivery guaranteed. C. B. Bankston,
Box 65, Buffalo, Leon Co., Texas.

PACKAGE bees and queens. Charles Wallace, Box 35, R. 1, Glenn, Cal.

LEATHER COLORED ITALIAN QUEENS—$2.00; after June 1, $1.00. Tested, $2.00.
A. W. Yates,
15 Chapman St., Hartford, Conn.

FOR SALE

FOR SALE—160 acres four miles from high school town, one mile from Musselshell River bottoms. Abundant sweet clover, 100 acres meadow; $12.00 per acre, one-half cash, balance at 6 per cent.
Mrs. E. M. Heide, Melstone, Mont.

SWEET CLOVER SEED—Hulled, 96 per cent pure, $10 hundred pounds. Samples free. Holloways Apiaries, Marietta, Okla.

SPECIALS—Hoffman brood frames, $3.85 per 100. Shallow extracting frames, $2.75 per 100. Also other bargains. All standard new first quality supplies. Send for price list today. Schmidt Bee Supply Co., 1420-1422 Hager Ave., St. Paul, Minn.

FOR SALE—One 17x8¼-inch Giffen foundation press in good condition. About 400 24-pound, two-tier shipping cases in the flat, without glass (Lewis goods) at 17c each; 200 12-pound shipping cases at 13c each.
L. & J. Leibrock, Mascoutah, Ill.

CANARY BIRDS—For a Christmas gift a fine singing canary of beautiful plumage will be appreciated by everybody. My strain of birds has unusual musical ability and voices of indescribable sweetness. Can be shipped safely at all seasons. Males, $7.50; extra selected, $10; females, $2.00.
F. W. Luebeck, Knox, Indiana.

HON-E-NUT CHOCOLATES — Assorted packages and 5c bars. Send for descriptive and illustrated circular, free. Fairmount Apiaries, Schuylkill Haven, Pa.

REGAL LILY—Blooming size bulbs, $1.00 per three, $3.00 per twelve. Description and seed culture mailed to you for the asking. F. Danley, Macomb, Ill.

FOR SALE—We are constantly accumulating bee supplies, slightly shopworn, odd sized, surpluses, etc., which we desire to dispose of and on which we can quote you bargain prices. Write for complete list of our bargain material. We can save you money on items you may desire from it.
Dadant & Sons, Hamilton, Illinois.

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FOR SALE—White clover honey in sixty-pound cans. Strictly No. 1 grade.
A. G. Kuersten, Burlington, Iowa.

FOR SALE—Finest extra white clover honey at 10c per pound. D. Steengrafe, 116 Broad St., New York City.

DELICIOUS FALL BLOSSOM HONEY—One can, $6.00. Two cans basswood, $9.50.
D. E. Lhommedieu, Colo, Iowa.

COTTON HONEY—Five-pound pail, postpaid, $1.50.
E. T. Edwards, Grandview, Texas.

FINEST quality clover honey in new 60's. Satisfaction guaranteed. Sample 10 cents. State quantity desired.
L. A. Thrall, Anthon, Iowa.

FOR SALE—White clover comb honey in standard 4¼x4¼x1⅞ sections. Prices on request. C. Holm, Genoa, Illinois.

FOR SALE—Our own crop white clover and amber fall honey in barrels and cans. State quantity wanted and we will quote prices. Samples on request.
Dadant & Sons, Hamilton, Illinois.

SEVERAL tons white clover extracted honey. Have been selling honey for 25 years and never had one complaint. Entire satisfaction guaranteed.
W. O. Hershey, Landisville, Pa.

FOR SALE—A-1 white clover honey in five-pound pails or sixty-pound cans at attractive prices. Also some fine quality light amber. Ross B. Scott, LaGrange, Indiana.

CLOVER white extracted honey 10c per pound delivered within third zone. In sixty-pound cans.
Marsalek Apiaries, Cadams, Neb.

EXCEPTIONAL quality clover honey. Clear, white, thick, mild and delicious. Fast retail seller. Inquire price.
Newman I. Lyle, Sheldon, Iowa.

HONEY in 60-lb. cans. White clover 10c, light amber 8½c.
F. J. Smith, Castalia, Ohio, R. 1.

FOR SALE—White clover honey in new 60-pound cans, cased single. Prices on request. John Olson, Davis, Illinois.

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Winkler Honey Co., Joliet, Ill.

HONEY WANTED—Comb and extracted. Any quantity. Send sample and best price. Blossom Cream Apiaries,
Frankenmuth, Mich.

FOR SALE—White clover honey in 60-lb. cans. Sample 15c.
Alfred Stutt, Creston, Iowa, R. 5.

CLOVER, also clover and buckwheat and chunk honey. Priced to sell. Samples free. Henry Stewart, Prophetstown, Ill.

FOR SALE—Finest quality white clover honey in new 60-pound cans.
Martin Carsmoe, Ruthven, Iowa.

FOR SALE—Finest quality clover honey.
Lewis Klaty, Carsonville, Mich.

FOR SALE—Bulk comb and extracted honey, quality the best. References, New Canton State Bank, Berry State Bank.
F. E. Hyde, New Canton, Ill.

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FOR SALE—Northern white, extracted and comb honey.
M. W. Cousineau, Moorhead, Minn.

FOR SALE—Fancy western Ohio white clover honey in new sixty-pound cans, 10 cents per pound. Twelve five-pound pails, $7.75. Discount on large lots. Sample 15c.
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CERTIFIED HONEY—Light color, excellent flavor and heavy body. Carload or case shipment. Write for prices and state quantity wanted. W. R. Perry Co., 1209 Howard St., Omaha, Neb.

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Sundberg Bros., Fergus Falls, Minn.

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Spring Valley, Ill.

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